

# MIND

## A QUARTERLY REVIEW

OF

## PSYCHOLOGY AND PHILOSOPHY.

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### I.—THE ORIGIN OF MUSIC.

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IN preparing a final edition of my *Essays, Scientific, Political and Speculative*, I have seized the occasion for adding a postscript to the essay on "The Origin and Function of Music". As, when embodied along with other matter in its permanent form, this postscript will be seen by comparatively few, it has seemed desirable to give it a wider diffusion by publishing it separately. The Editor of MIND has kindly yielded to my proposal so to publish it.

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An opponent, or partial opponent, of high authority, whose views were published some fourteen years after the above-named essay, must here be answered: I mean Mr. Darwin. Diligent and careful as an observer beyond naturalists in general, and still more beyond those who are untrained in research, his judgment on a question which must be decided by induction is one to be received with great respect. I think, however, examination will show that in this instance Mr. Darwin's observations are inadequate, and his reasonings upon them inconclusive. Swayed by his doctrine of sexual selection, he has leaned towards the

view that music had its origin in the expression of amatory feeling, and has been led to over-estimate such evidence as he thinks favours that view, while ignoring the difficulties in its way, and the large amount of evidence supporting another view. Before considering the special reasons for dissenting from his hypothesis, let us look at the most general reasons.

The interpretation of music which Mr. Darwin gives, agrees with my own in supposing music to be developed from vocal noises; but differs in supposing a particular class of vocal noises to have originated it—the amatory class. I have aimed to show that music has its germs in the sounds which the voice emits under excitement, and eventually gains this or that character according to the kind of excitement; whereas Mr. Darwin argues that music arises from those sounds which the male makes during the excitements of courtship, that they are consciously made to charm the female, and that from the resulting combinations of sounds arises not love-music only but music in general. That certain tones of voice and cadences having some likeness of nature are spontaneously used to express grief, others to express joy, others to express affection, and others to express triumph or martial ardour, is undeniable. According to the view I have set forth, the whole body of these vocal manifestations of emotion form the root of music. According to Mr. Darwin's view, the sounds which are prompted by the amatory feeling only, having originated musical utterance, there are derived from these all the other varieties of musical utterance which aim to express other kinds of feeling. This roundabout derivation has, I think, less probability than the direct derivation.

This antithesis and its implications will perhaps be more clearly understood on looking at the facts under their nervo-muscular aspect. Mr. Darwin recognises the truth of the doctrine with which the above-named essay sets out, that feeling discharges itself in action: saying of the air-breathing vertebrata that—

“When the primeval members of this class were strongly excited and their muscles violently contracted, purposeless sounds would almost certainly have been produced; and these, if they proved in any way serviceable, might readily have been modified or intensified by the preservation of properly adapted variations” (*The Descent of Man*, vol. II., p. 331).

But though this passage recognises the general relation between feelings and those muscular contractions which cause sounds, it does so inadequately; since it ignores, on

the one hand, those loudest sounds which accompany intense sensations—the shrieks and groans of bodily agony; while, on the other hand, it ignores those multitudinous sounds not produced “under the excitement of love, rage, and jealousy,” but which accompany ordinary amounts of feelings, various in their kinds. And it is because he does not bear in mind how large a proportion of vocal noises are caused by other excitements, that Mr. Darwin thinks “a strong case can be made out, that the vocal organs were primarily used and perfected in relation to the propagation of the species” (p. 330).

Certainly the animals around us yield but few facts countenancing his view. The cooing of pigeons may, indeed, be named in its support; and it may be contended that caterwauling furnishes evidence; though I doubt whether the sounds are made by the male to charm the female. But the howling of dogs has no relation to sexual excitements; nor has their barking, which is used to express emotion of almost any kind. Pigs grunt sometimes through pleasurable expectation, sometimes during the gratifications of eating, sometimes from a general content while seeking about for food. The bleatings of sheep, again, occur under the promptings of various feelings, usually of no great intensity: social and maternal rather than sexual. The like holds with the lowing of cattle. Nor is it otherwise with poultry. The quacking of ducks indicates general satisfaction, and the screams occasionally vented by a flock of geese seem rather to express a wave of social excitement than anything else. Save after laying an egg, when the sounds have the character of triumph, the cluckings of a hen show content; and on various occasions cock-crowing apparently implies good spirits only. In all cases an overflow of nervous energy has to find vent; and while in some cases it leads to wagging of the tail, in others it leads to contraction of the vocal muscles. That this relation holds, not of one kind of feeling, but of many kinds, is a truth which seems to me at variance with the view “that the vocal organs were primarily used and perfected in relation to the propagation of the species”.

The hypothesis that music had its origin in the amatory sounds made by the male to charm the female, has the support of the popular idea that the singing of birds constitutes a kind of courtship—an idea adopted by Mr. Darwin when he says that “the male pours forth his full volume of song, in rivalry with other males, for the sake of captivating the female”. Usually, Mr. Darwin does not accept with-

out criticism and verification, the beliefs he finds current; but in this case he seems to have done so. Even cursory observation suffices to dissipate this belief, initiated, I suppose, by poets. In preparation for dealing with the matter I have made memoranda concerning various song-birds, dating back to 1883. On the 7th of February of that year I heard a lark singing several times; and, still more remarkably, during the mild winter of 1884 I saw one soar, and heard it sing, on the 10th January. Yet the lark does not pair till March. Having heard the redbreast near the close of August, 1888, I noted the continuance of its song all through the autumn and winter, up to Christmas eve, Christmas day, the 29th of December, and again on the 18th January, 1889. How common is the singing of the thrush during mild weather in winter, everyone must have observed. The presence of thrushes behind my house has led to the making of notes on this point. The male sang in November, 1889; I noted the song again on Christmas eve, again on the 13th January, 1890, and from time to time all through the rest of that month. I heard little of his song in February, which is the pairing season; and none at all, save a few notes early in the morning, during the period of rearing the young. But now that, in the middle of May, the young, reared in a nest in my garden, have sometime since flown, he has recommenced singing vociferously at intervals throughout the day; and doubtless, in conformity with what I have observed elsewhere, will go on singing till July. How marked is the direct relation between singing and the conditions which cause high spirits, is perhaps best shown by a fact I noted on the 4th December, 1888, when, the day being not only mild but bright, the cospes on Holmwood Common, Dorking, were vocal just as on a spring day, with a chorus of birds of various kinds—robins, thrushes, chaffinches, linnets, and sundry others of which I did not know the names. Ornithological works furnish verifying statements. Wood states that the hedge-sparrow continues "to sing throughout a large portion of the year, and only ceasing during the time of the ordinary moult." The song of the blackcap, he says, "is hardly suspended throughout the year"; and of caged birds which sing continuously, save when moulting, he names the grosbeak, the linnet, the goldfinch, and the siskin.

I think these facts show that the popular idea adopted by Mr. Darwin is untenable. What then is the true interpretation? Simply that like the whistling and hum-



ming of tunes by boys and men, the singing of birds results from overflow of energy—an overflow which in both cases ceases under depressing conditions. The relation between courtship and singing, so far as it can be shown to hold, is not a relation of cause and effect, but a relation of concomitance: the two are simultaneous results of the same cause. Throughout the animal kingdom at large, the commencement of reproduction is associated with an excess of those absorbed materials needful for self-maintenance; and with a consequent ability to devote a part to the maintenance of the species. This constitutional state is one with which there goes a tendency to superfluous expenditure in various forms of action—unusual vivacity of every kind, including vocal vivacity. While we thus see why pairing and singing come to be associated, we also see why there is singing at other times when the feeding and weather are favourable; and why, in some cases, as in those of the thrush and the robin, there is more singing after the breeding season than before or during the breeding season. We are shown, too, why these birds, and especially the thrush, so often sing in the winter: the supply of worms on lawns and in gardens being habitually utilised by both, and thrushes having the further advantage that they are strong enough to break the shells of the hibernating snails: this last ability being connected with the fact that thrushes and blackbirds are the first among the singing birds to build. It remains only to add that the alleged singing of males against one another with the view of charming the females is open to parallel criticisms. How far this competition happens during the pairing season I have not observed, but it certainly happens out of the pairing season. I have several times heard blackbirds singing alternately in June. But the most conspicuous instance is supplied by the redbreasts. These habitually sing against one another during the autumn months: reply and rejoinder being commonly continued for five minutes at a time.

Even did the evidence support the popular view, adopted by Mr. Darwin, that the singing of birds is a kind of courtship—even were there good proof, instead of much disproof, that a bird's song is a developed form of the sexual sounds made by the male to charm the female; the conclusion would, I think, do little towards justifying the belief that human music has had a kindred origin. For, in the first place, the bird-type in general, developed as it is out of the reptilian type, is very remotely related to that

type of the *Vertebrata* which ascends to Man as its highest exemplar; and, in the second place, song-birds belong, with but few exceptions, to the single order of *Insectores*—one order only, of the many orders constituting the class. So that, if the *Vertebrata* at large be represented by a tree, of which Man is the topmost twig, then it is at a considerable distance down the trunk that there diverges the branch from which the bird-type is derived; and the group of singing-birds forms but a terminal sub-division of this branch—lies far out of the ascending line which ends in Man. To give appreciable support to Mr. Darwin's view, we ought to find vocal manifestations of the amatory feeling becoming more pronounced as we ascend along that particular line of inferior *Vertebrata* out of which Man has arisen. Just as we find other traits which pre-figure human traits (instance arms and hands adapted for grasping) becoming more marked as we approach Man; so should we find, becoming more marked, this sexual use of the voice, which is supposed to end in human song. But we do not find this. The South-American monkeys ("the Howlers," as they are sometimes called), which, in chorus, make the woods resound for hours together with their "dreadful concert," appear, according to Rengger, to be prompted by no other desire than that of making a noise. Mr. Darwin admits, too, that this is generally the case with the gibbons: the only exception he is inclined to make being in the case of *Hylobates agilis*, which, on the testimony of Mr. Waterhouse, he says ascends and descends the scale by half-tones.<sup>1</sup> This comparatively musical set of sounds, he thinks, may be used to charm the female; though there is no evidence forthcoming that this is the case. When we remember that in the forms nearest to the human—the chimpanzees and the gorilla—there is nothing which approaches even thus far towards musical utterance, we see that the hypothesis has next to none of that support which ought to be forthcoming. Indeed in his *Descent of Man*, vol. ii., p. 332, Mr. Darwin himself says:—"It is a surprising fact that we have not as yet any good evidence

<sup>1</sup> It is far more probable that the ascents and descents made by this gibbon consisted of indefinitely-slurred tones. To suppose that each was a series of definite semi-tones strains belief to breaking point; considering that among human beings the great majority, even of those who have good ears, are unable to go up or down the chromatic scale without being taught to do so. The achievement is one requiring considerable practice; and that such an achievement should be spontaneous on the part of a monkey is incredible.

that these organs are used by male mammals to charm the females": an admission which amounts to something like a surrender.

Even more marked is the absence of proof when we come to the human race itself—or rather, not absence of proof but presence of disproof. Here, from the *Descriptive Sociology*, where the authorities will be found under the respective heads, I quote a number of testimonies of travellers concerning primitive music: commencing with those referring to the lowest races.

"The songs of the natives [of Australia] . . . are chiefly made on the spur of the moment, and refer to something that has struck the attention at the time." "The Watchandies seeing me much interested in the genus *Eucalyptus* soon composed a song on this subject." The Fuegians are fond of music and generally sing in their boats, doubtless keeping time, as many primitive peoples do. "The principal subject of the songs of the Araucanians is the exploits of their heroes:" when at work their "song was simple, referring mostly to their labour," and was the same "for every occasion, whether the burden of the song be joy or sorrow". The Greenlanders sing of "their exploits in the chase" and "chant the deeds of their ancestors". "The Indians of the Upper Mississippi vocalise an incident, as—'They have brought us a fat dog,':" then the chorus goes on for a minute. Of other North-American Indians we read—"the air which the women sang was pleasing . . . the men first gave out the words, which formed a consummate glorification of themselves". Among the Carriers (of North America) there are professed composers, who "turn their talent to good account on the occasion of a feast, when new airs are in great request". Of the New Zealanders we read:—"The singing of such compositions [laments] resembles cathedral chanting". "Passing events are described by extemporaneous songs, which are preserved when good." "When men worked together appropriate airs were sung." When presenting a meal to travellers, women would chant—"What shall be our food? shell fish and fern-root, that is the root of the earth". Among the Sandwich Islanders "most of the traditions of remarkable events in their history are preserved in songs". When taught reading they could not "recite a lesson without chanting or singing it". Cook found the Tahitians had itinerant musicians who gave narrative chants quite unpremeditated. "A Samoan can hardly put his paddle in the water without striking up some chant." A chief of the Kyans, "Tamawan, jumped up and

while standing burst out into an extempore song, in which Sir James Brooke and myself, and last not least the wonderful steamer, were mentioned with eulogies". In East Africa "the fisherman will accompany his paddle, the porter his trudge, and the housewife her task of rubbing down grain, with song". In singing, the East African "contents himself with improvising a few words without sense or rhyme and repeats them till they nauseate". Among the Dahomans any incident "from the arrival of a stranger to an earthquake" is turned into a song. When rowing, the Coast-negroes sing "either a description of some love intrigue or the praise of some woman celebrated for her beauty". In Loango "the women as they till the field make it echo with their rustic songs". Park says of the Bambarran—"they lightened their labours by songs, one of which was composed extempore; for I was myself the subject of it". "In some parts of Africa nothing is done except to the sound of music." "They are very expert in adapting the subjects of these songs to current events." The Malays "amuse all their leisure hours . . . with the repetition of songs, which are for the most part proverbs illustrated. . . . Some that they rehearse in a kind of recitative at their *bimbangs* or feasts are historical love-tales." A Sumatran maiden will sometimes begin a tender song and be answered by one of the young men. The ballads of the Kamtschadales are "inspired apparently by grief, love, or domestic feeling"; and their music conveys "a sensation of sorrow and vague, unavailing regret". Of their love-songs it is said "the women generally compose them". A Kirghiz "singer sits on one knee and sings in an unnatural tone of voice, his lay being usually of an amorous character". Of the Yakuts we are told "their style of singing is monotonous . . . their songs described the beauty of the landscape in terms which appeared to me exaggerated".

In these statements, which, omitting repetitions, are all which the *Descriptive Sociology* contains relevant to the issue, several striking facts are manifest. Among the lowest races the only musical utterances named are those which refer to the incidents of the moment, and seem prompted by feelings which those incidents produce. The derivation of song or chant from emotional speech in general, thus suggested, is similarly suggested by the habits of many higher races; for they, too, show us that the musically-expressed feelings relevant to the immediate occasion, or to past occasions, are feelings of various kinds: now of simple good spirits and now of joy or triumph—now of surprise, praise,

admiration, and now of sorrow, melancholy, regret. Only among certain of the more advanced races, as the semi-civilised Malays and peoples of Northern Asia, do we read of love-songs; and then, strange to say, these are mentioned as mostly coming, not from men, but from women. Out of all the testimonies there is not one which tells of a love-song spontaneously commenced by a man to charm a woman. Entirely absent among the rudest types and many of the more developed types, amatory musical utterance, where first found, is found under a form opposite to that which Mr. Darwin's hypothesis implies; and we have to seek among civilised peoples before we meet, in serenades and the like, music of the kind which, according to his view, should be the earliest.<sup>1</sup>

Even were his view countenanced by the facts, there would remain unexplained the process by which sexually-excited sounds have been evolved into music. In the above-named essay I have indicated the various qualities, relations, and combinations of tones, spontaneously prompted by emotions of all kinds, which exhibit, in undeveloped forms, the traits of recitative and melody. To have reduced his hypothesis to a shape admitting of comparison, Mr. Darwin should have shown that the sounds excited by sexual emotions possess these same traits; and, to have proved that his hypothesis is the more tenable, should have shown that they possess these same traits in a greater degree. But he has not attempted to do this. He has simply suggested that, instead of having its roots in the vocal sounds caused by feelings of all kinds, music has its roots in the vocal sounds caused by the amatory feeling only: giving no reason why the effects of the feelings at large should be ignored, and the effects of one particular feeling alone recognised.

Nineteen years after my essay on "The Origin and Function of Music" was published, Mr. Edmund Gurney criticised it in an article which made its appearance in the *Fortnightly Review* for July 1876. Absorption in more important work prevented me from replying.

<sup>1</sup> After the above paragraphs had been put in print I received from an American anthropologist, the Rev. Owen Dorsey, some essays containing kindred evidence. Of over three dozen songs and chants of the Omaha, Ponka, and other Indians, in some cases given with music and in other cases without, there are but five which have any reference to amatory feeling; and while in these the expression of amatory feeling comes from women, nothing more than derision of them comes from men.

Though, some ten years ago, I thought of defending my views against those of Mr. Darwin and Mr. Gurney, the occurrence of Mr. Darwin's death obliged me to postpone for a time any discussion of his views; and then, the more recent unfortunate death of Mr. Gurney caused a further postponement. I must now, however, say that which seems needful, though there is no longer any possibility of a rejoinder from him.

Some parts of Mr. Gurney's criticism I have already answered by implication; for he adopts the hypothesis that music originated in the vocal utterances prompted by sexual feeling. To the reasons above given for rejecting this hypothesis, I will add here, what I might have added above, that it is at variance with one of the fundamental laws of evolution. All development proceeds from the general to the special. First there appear those traits which a thing has in common with many other things; then those traits which it has in common with a smaller class of things; and so on until there eventually arise those traits which distinguish it from everything else. The genesis which I have described conforms to this fundamental law. It posits the antecedent fact that feeling in general produces muscular contraction in general; and the less general fact that feeling in general produces, among other muscular contractions, those which move the respiratory and vocal apparatus. With these it joins the still less general fact that sounds indicative of feelings vary in sundry respects according to the intensity of the feelings; and then enumerates the still less general facts which show us the kinship between the vocal manifestations of feeling and the characters of vocal music: the implication being that there has gone on a progressive specialisation. But the view which Mr. Gurney adopts from Mr. Darwin is that from the special actions producing the special sounds accompanying sexual excitement, were evolved those various actions producing the various sounds which accompany all other feelings. Vocal expression of a particular emotion came first, and from this proceeded vocal expressions of emotions in general: the order of evolution was reversed.

To deficient knowledge of the laws of evolution are due sundry of Mr. Gurney's objections. He makes a cardinal error in assuming that a more evolved thing is distinguished from less evolved things in respect of *all* the various traits of evolution; whereas, very generally, a higher degree of evolution in some or most respects, is accompanied by an equal or lower degree of evolution in other respects. On the average, increase of locomotive power goes along with

advance of evolution; and yet numerous mammals are more fleet than man. The stage of development is largely indicated by degree of intelligence; and yet the more-intelligent parrot is inferior in vision, in speed, and in destructive appliances, to the less-intelligent hawk. The contrast between birds and mammals well illustrates the general truth. A bird's skeleton diverges more widely from the skeleton of the lower vertebrates in respect of heterogeneity than does the skeleton of a mammal; and the bird has a more developed respiratory system, as well as a higher temperature of blood, and a superior power of locomotion. Nevertheless, many mammals in respect of bulk, in respect of various appliances (especially for prehension), and in respect of intelligence, are more evolved than birds. Thus it is obviously a mistake to assume that whatever is more highly evolved in general character is more highly evolved in every trait.

Of Mr. Gurney's several objections which are based on this mistake here is an example. He says—"Loudness though a frequent is by no means a universal or essential element, either of song or of emotional speech" (p. 107). Under one of its aspects this criticism is self-destructive; for if, though both relatively loud in most cases, song and emotional speech are both characterised by the occasional use of subdued tones, then this is a further point of kinship between them—a kinship which Mr. Gurney seeks to disprove. Under its other aspect this criticism implies the above described misconception. If in a song, or rather in some part or parts of a song, the trait of loudness is absent, while the other traits of developed emotional utterance are present, it simply illustrates the truth that the traits of a highly-evolved product are frequently not all present together.

A like answer is at hand to the next objection he makes. It runs thus:—

"In the recitative which he [Mr. Spencer] himself considers naturally and historically a step between speech and song, the rapid variation of pitch is impossible, and such recitative is distinguished from the tones even of common speech precisely by being more monotonous" (p. 108).

But Mr. Gurney overlooks the fact that while, in recitative, some traits of developed emotional utterance are not present, two of its traits are present. One is that greater resonance of tone, caused by greater contraction of the vocal chords, which distinguishes it from ordinary speech. The other is the relative elevation of pitch, or divergence



from the medium tones of voice: a trait similarly implying greater strain of certain vocal muscles, resulting from stronger feeling.

Another difficulty raised by Mr. Gurney he would probably not have set down had he been aware that one character of musical utterance which he thinks distinctive, is a character of all phenomena into which motion enters as a factor. He says:—"Now no one can suppose that the sense of rhythm can be derived from emotional speech" (p. 110). Had he referred to the chapter on "The Rhythm of Motion" in *First Principles*, he would have seen that, in common with inorganic actions, all organic actions are completely or partially rhythmical—from appetite and sleep to inspirations and heart-beats; from the winking of the eyes to the contractions of the intestines; from the motions of the legs to discharges through the nerves. Having contemplated such facts he would have seen that the rhythmical tendency which is perfectly displayed in musical utterance, is imperfectly displayed in emotional speech. Just as under emotion we see swayings of the body and wringings of the hands, so do we see contractions of the vocal organs which are now stronger and now weaker. Surely it is manifest that the utterances of passion, far from being monotonous, are characterised by rapidly-recurring ascents and descents of tone and by rapidly-recurring emphases: there is rhythm, though it is an irregular rhythm.

Want of knowledge of the principles of evolution has, in another place, led Mr. Gurney to represent as an objection what is in reality a verification. He says:—

"Music is distinguished from emotional speech in that it proceeds not only by fixed degrees in time, but by fixed degrees in the scale. This is a constant quality through all the immense quantity of embryo and developed scale-systems that have been used; whereas the transitions of pitch which mark emotional affections of voice are, as Helmholtz has pointed out, of a gliding character" (p. 113).

Had Mr. Gurney known that evolution in all cases is from the indefinite to the definite, he would have seen that as a matter of course the gradations of emotional speech must be indefinite in comparison with the gradations of developed music. Progress from the one to the other is in part *constituted* by increasing definiteness in the time-intervals and increasing definiteness in the tone-intervals. Were it otherwise, the hypothesis I have set forth would lack one of its evidences. To his allegation that not only the "developed

scale-systems" but also the "embryo" scale-systems are definite, it may obviously be replied that the mere existence of any scale-system capable of being written down, implies that the earlier stage of the progress has already been passed through. To have risen to a scale-system is to have become definite; and until a scale-system has been reached vocal phrases cannot have been recorded. Moreover had Mr. Gurney remembered that there are many people with musical perceptions so imperfect that when making their merely recognisable, and sometimes hardly recognisable, attempts to whistle or hum melodies, they show how vague are their appreciations of musical intervals, he would have seen reason for doubting his assumption that definite scales were reached all at once. The fact that in what we call bad ears there are all degrees of imperfection, joined with the fact that where the imperfection is not great practice may remedy it, suffice of themselves to show that definite perceptions of musical intervals were reached by degrees.

Some of Mr. Gurney's objections are strangely insubstantial. Here is an example:—

"The fact is that song, which moreover in our time is but a limited branch of music, is perpetually making conscious efforts; for instance, the most peaceful melody may be a considerable strain to a soprano voice, if sung in a very high register: while speech continues to obey in a natural way the physiological laws of emotion" (p. 117).

That in exaggerating and emphasising the traits of emotional speech, the singer should be led to make "conscious efforts" is surely natural enough. What would Mr. Gurney have said of dancing? He would scarcely have denied that saltatory movements often result spontaneously from excited feeling; and he could hardly have doubted that primitive dancing arose as a systematised form of such movements. Would he have considered the belief that stage-dancing is evolved from these spontaneous movements to be negated by the fact that a stage-dancer's bounds and gyrations are made with "conscious efforts"?

In his elaborate work on *The Power of Sound*, Mr. Gurney, repeating in other forms the objections I have above dealt with, adds to them some others. One of these, which appears at first sight to have much weight, I must not pass by. He thus expresses it:

"Any one may convince himself that not only are the intervals used in emotional speech very large, twelve diatonic tones being quite an ordinary skip, but that he uses extremes of both high and low pitch with his speaking voice, which, if he tries to dwell on them and make them resonant, will be found to lie beyond the compass of his singing voice" (p. 479).

Now the part of my hypothesis which Mr. Gurney here combats is that, as in emotional speech so in song, feeling, by causing muscular contractions, causes divergencies from the middle tones of the voice, which become wider as it increases; and that this fact supports the belief that song is developed from emotional speech. To this Mr. Gurney thinks it a conclusive answer that higher notes are used by the speaking voice than by the singing voice. But if, as his words imply, there is a physical impediment to the production of notes in the one voice as high as those in the other, then my argument is justified if, in either voice, extremes of feeling are shown by extremes of pitch. If, for example, the celebrated *ut de poitrine* with which Tamberlik brought down the house in one of the scenes of William Tell, was recognised as expressing the greatest intensity of martial patriotism, my position is warranted, even though in his speaking voice he could have produced a still higher note.

Of answers to Mr. Gurney's objections the two most effective are suggested by the passage in which he sums up his conclusions. Here are his words.

"It is enough to recall how every consideration tended to the same result; that the oak grew from the acorn; that the musical faculty and pleasure, which have to do with music and nothing else, are the representatives and linear descendants of a faculty and pleasure which were musical and nothing else; and that, however rudely and tentatively applied to speech, Music was a *separate order*" (p. 492).

Thus, then, it is implied that the true germs of music stand towards developed music as the acorn to the oak. Now suppose we ask—How many traits of the oak are to be found in the acorn? Next to none. And then suppose we ask—How many traits of music are to be found in the tones of emotional speech? Very many. Yet while Mr. Gurney thinks that music had its origin in something which might have been as unlike it as the acorn is unlike the oak, he rejects the theory that it had its origin in something as much like it as the cadences of emotional speech; and he does this because there are sundry differences between the characters of speech-cadences and the characters of music. In the one case he tacitly assumes a great unlikeness between germ and product; while in the other case he objects because germ and product are not in all respects similar!

I may end by pointing out how extremely improbable, *à priori*, is Mr. Gurney's conception. He admits, as perforce he must, that emotional speech has various traits in common with recitative and song—relatively greater resonance, rela-

tively greater loudness, more marked divergences from medium tones, the use of the extremes of pitch in signifying the extremes of feeling, and so on. But, denying that the one is derived from the others, he implies that these kindred groups of traits have had independent origins. Two sets of peculiarities in the use of the voice which show various kinships, have nothing to do with one another! I think it merely requires to put the proposition in this shape to see how incredible it is.

Sundry objections to the views contained in the essay on "The Origin and Function of Music," have arisen from misconception of its scope. An endeavour to explain the *origin* of music has been dealt with as though it were a theory of music in its entirety. An hypothesis concerning the rudiments has been rejected because it did not account for everything contained in the developed product. To preclude this misapprehension for the future, and to show how much more is comprehended in a theory of music than I professed to deal with, let me enumerate the several components of musical effect. They may properly be divided into *sensational*, *perceptual*, and *emotional*.

That the sensational pleasure is distinguishable from the other pleasures which music yields, will not be questioned. A sweet sound is agreeable in itself, when heard out of relation to other sounds. Tones of various *timbres*, too, are severally appreciated as having their special beauties. Of further elements in the sensational pleasure have to be named those which result from certain congruities between notes and immediately succeeding notes. This pleasure, like the primary pleasure which fine quality yields, appears to have a purely physical basis. We know that the agreeableness of simultaneous tones depends partly on the relative frequency of recurring correspondences of the vibrations producing them, and partly on the relative infrequency of beats, and we may suspect that there is a kindred cause for the agreeableness of successive tones; since the auditory apparatus which has been at one instant vibrating in a particular manner, will take up certain succeeding vibrations more readily than others. Evidently it is a question of the *degree* of congruity; for the most congruous vibrations, those of the octaves, yield less pleasure when heard in succession than those of which the congruity is not so great. To obtain the greatest pleasure in this and other things, there requires both likeness and difference. Recognition of this fact introduces us to the next element of

sensational pleasure—that due to contrast ; including contrast of pitch, of loudness, and of *timbre*. In this case, as in other cases, the disagreeableness caused by frequent repetition of the same sensation (here literally called “monotony”) results from the exhaustion which any single nervous agent undergoes from perpetual stimulation ; and contrast gives pleasure because it implies action of an agent which has had rest. It follows that much of the sensational pleasure to be obtained from music depends on such adjustments of sounds as bring into play, without conflict, many nervous elements : exercising all and not over-exerting any. We must not overlook a concomitant effect. With the agreeable sensation is joined a faint emotion of an agreeable kind. Beyond the simple definite pleasure yielded by a sweet tone, there is a vague, diffused pleasure. As indicated in the *Principles of Psychology*, §537 each nervous excitation produces reverberation throughout the nervous system at large ; and probably this indefinite emotional pleasure is a consequence. Doubtless some shape is given to it by association. But after observing how much there is in common between the diffused feeling aroused by smelling at a deliciously scented flower and that aroused by listening to a sweet tone, it will, I think, be perceived that the more general cause predominates.

The division between the sensational effects and the perceptive effects is of course indefinite. As above implied, part of the sensational pleasure depends on the relation between each tone and the succeeding tone ; and hence this pleasure gradually merges into that which arises from perceiving the structural connexions between the phrases and between the larger parts of musical compositions. Much of the gratification given by a melody consists in the consciousness of the relations between each group of sounds heard and the groups of sounds held in memory as having just passed, as well as those represented as about to come. In many cases the passage listened to would not be regarded as having any beauty were it not for its remembered connexions with passages in the immediate past and the immediate future. If, for example, from the first movement of Beethoven's Funeral-March sonata the first five notes are detached, they appear to be meaningless ; but if, the movement being known, they are joined with imaginations of the anticipated phrases, they immediately acquire meaning and beauty. Indefinable as are the causes of this perceptive pleasure in many cases, some causes of it are definable. Symmetry is one. A chief element in melodic effect results

from repetitions of phrases which are either identical, or differ only in pitch, or differ only in minor variations: there being in the first case the pleasure derived from perception of complete likeness, and in the other cases the greater pleasure derived from perception of likeness with difference—a perception which is more involved, and therefore exercises a greater number of nervous agents. Next comes, as a source of gratification, the consciousness of pronounced unlikeness or contrast; such as that between passages above the middle tones and passages below, or as that between ascending phrases and descending phrases. And then we rise to larger contrasts; as when, the first theme in a melody having been elaborated, there is introduced another having a certain kinship though in many respects different, after which there is a return to the first theme: a structure which yields more extensive and more complex perceptions of both differences and likenesses. But while perceptive pleasures include much that is of the highest, they also include much that is of the lowest. A certain kind of interest, if not of beauty, is producible by the likenesses and contrasts of musical phrases which are intrinsically meaningless or even ugly. A familiar experience exemplifies this. If a piece of paper is folded and on one side of the crease is drawn an irregular line in ink, which, by closing the paper, is blotted on the opposite side of the crease, there results a figure which, in virtue of its symmetry, has some beauty; no matter how entirely without beauty the two lines themselves may be. Similarly, some interest results from the parallelism of musical phrases, notwithstanding utter lack of interest in the phrases themselves. The kind of interest resulting from such parallelisms, and from many contrasts, irrespective of any intrinsic worth in their components, is that which is most appreciated by the musically-uncultured, and gives popularity to miserable drawing-room ballads and vulgar music-hall songs.

The remaining element of musical effect consists in the idealised rendering of emotion. This, as I have sought to show, is the primitive element, and will ever continue to be the vital element; for if "melody is the soul of music," then expression is the soul of melody—the soul without which it is mechanical and meaningless, whatever may be the merit of its form. This primitive element may with tolerable clearness be distinguished from the other elements, and may coexist with them in various degrees: in some cases being the predominant element. Anyone who, in analytical mood, listens to such a song as *Robert, toi que j'aime*, cannot, I think, fail to perceive that its effectiveness

depends on the way in which it exalts and intensifies the traits of passionate utterance. No doubt as music develops, the emotional element (which affects structure chiefly through the forms of phrases) is increasingly complicated with, and obscured by, the perceptive element; which both modifies these phrases and unites them into symmetrical and contrasted combinations. But though the groups of notes which emotion prompts admit of elaboration into structures that have additional charms due to artfully-arranged contrasts and repetitions, the essential element is liable to be thus submerged in the non-essential. Only in melodies of high types, such as the *Addio* of Mozart and *Adelaide* of Beethoven, do we see the two requirements simultaneously fulfilled. Musical genius is shown in achieving the decorative beauty without losing the beauty of emotional meaning.

It goes without saying that there must be otherwise accounted for that relatively modern element in musical effect which has now almost outgrown in importance the other elements—I mean harmony. This cannot be affiliated on the natural language of emotion; since, in such language, limited to successive tones, there cannot originate the effects wrought by simultaneous tones. Dependent as harmony is on relations among rates of aerial pulses, its primary basis is purely mechanical; and its secondary basis lies in the compound vibrations which certain combinations of mechanical rhythms cause in the auditory apparatus. The resulting pleasure must, therefore, be due to nervous excitations of kinds which, by their congruity, exalt one another; and thus generate a larger volume of agreeable sensation. A further pleasure of sensational origin which harmony yields is due to contrapuntal effects. Skilful counterpoint has the general character that it does not repeat in immediate succession similar combinations of tones and similar directions of change; and by thus avoiding temporary over-tax of the nervous structures brought into action, keeps them in better condition for subsequent action. Absence of regard for this requirement characterises the music of Gluck, of whom Handel said—"He knows no more counterpoint than my cook"; and it is this disregard which produces its cloying character. Respecting the effects of harmony I will add only that the vague emotional accompaniment to the sensation produced by a single sweet tone, is paralleled by the stronger emotional accompaniment to the more voluminous and complex sensation produced by a fine chord. Clearly this vague emotion forms a large component in the pleasure which harmony gives.



While thus recognising, and indeed emphasising, the fact that of many traits of developed music my hypothesis respecting the origin of music yields no explanation, let me point out that this hypothesis gains a further general support from its conformity to the law of evolution. Progressive integration is seen in the immense contrast between the small combinations of tones constituting a cadence of grief, or anger, or triumph, and the vast combinations of tones, simultaneous and successive, constituting an oratorio. Great advance in coherence becomes manifest when, from the lax unions among the sounds in which feeling spontaneously expresses itself, or even from those few musical phrases which constitute a simple air, we pass to those elaborate compositions in which portions small and large are tied together into extended organic wholes. On comparing the unpremeditated inflexions of the voice in emotional speech, vague in tones and times, with those premeditated ones which the musician arranges for stage or concert-room, in which the divisions of time are exactly measured, the successive intervals precise, and the harmonies adjusted to a nicety, we observe in the last a far higher definiteness. And immense progress in heterogeneity is seen on putting side by side the monotonous chants of savages with the musical compositions familiar to us; each of which is relatively heterogeneous within itself, and the assemblage of which forms an immeasurably heterogeneous aggregate.

Strong support for the theory enunciated in this essay, and defended in the foregoing paragraphs, is furnished by the testimonies of two travellers in Hungary, given in works published in 1878 and 1888 respectively. Here is an extract from the first of the two.

"Music is an instinct with these Hungarian gipsies. They play by ear, and with a marvellous precision, not surpassed by musicians who have been subject to the most careful training. . . . The airs they play are most frequently compositions of their own, and are in character quite peculiar. . . . I heard on this occasion one of the gipsy airs which made an indelible impression on my mind; it seemed to me the thrilling utterance of a people's history. There was the low wail of sorrow, of troubled passionate grief, stirring the heart to restlessness, then the sense of turmoil and defeat; but upon this breaks suddenly a wild burst of exultation, of rapturous joy—a triumph achieved, which hurries you along with it in resistless sympathy. The excitable Hungarians can literally become intoxicated with this music—and no wonder. You cannot reason upon it, or explain it, but its strains compel you to sensations of despair and joy, of exultation and excitement, as though under the influence of some potent charm."—*Round about the Carpathians*, by Andrew F. Crosse, pp. 11, 12.

Still more graphic and startling is the description given by a more recent traveller, E. Gerard.

"Devoid of printed notes, the Tzigane is not forced to divide his attention between a sheet of paper and his instrument, and there is consequently nothing to detract from the utter abandonment with which he absorbs himself in his playing. He seems to be sunk in an inner world of his own; the instrument sobs and moans in his hands, and is pressed tight against his heart as though it had grown and taken root there. This is the true moment of inspiration, to which he rarely gives way, and then only in the privacy of an intimate circle, never before a numerous and unsympathetic audience. Himself spell-bound by the power of the tones he evokes, his head gradually sinking lower and lower over the instrument, the body bent forward in an attitude of rapt attention and his ear seeming to hearken to far off ghostly strains audible to himself alone, the untought Tzigane achieves a perfection of expression unattainable by mere professional training.

"This power of identification with his music is the real secret of the Tzigane's influence over his audience. Inspired and carried away by his own strains, he must perforce carry his hearers with him as well; and the Hungarian listener throws himself heart and soul into this species of musical intoxication, which to him is the greatest delight on earth. There is a proverb which says, 'The Hungarian only requires a gipsy fiddler and a glass of water in order to make him quite drunk;' and, indeed, intoxication is the only word fittingly to describe the state of exaltation into which I have seen a Hungarian audience thrown by a gipsy band.

"Sometimes, under the combined influence of music and wine, the Tziganes become like creatures possessed; the wild cries and stamps of an equally excited audience only stimulate them to greater exertions. The whole atmosphere seems tossed by billows of passionate harmony; we seem to catch sight of the electric sparks of inspiration flying through the air. It is then that the Tzigane player gives forth everything that is secretly lurking within him—fierce anger, childish wailings, presumptuous exaltation, brooding melancholy, and passionate despair; and at such moments, as a Hungarian writer has said, one could readily believe in his power of drawing down the angels from heaven into hell!

"Listen how another Hungarian has here described the effect of their music:—'How it rushes through the veins like electric fire! How it penetrates straight to the soul! In soft plaintive minor tones the *adagio* opens with a slow rhythmical movement: it is a sighing and longing of unsatisfied aspirations; a craving for undiscovered happiness; the lover's yearning for the object of his affection; the expression of mourning for lost joys, for happy days gone for ever; then abruptly changing to a major key, the tones get faster and more agitated; and from the whirlpool of harmony the melody gradually detaches itself, alternately drowned in the foam of overbreaching waves, to reappear floating on the surface with undulating motion—collecting as it were fresh power for a renewed burst of fury. But quickly as the storm came it is gone again, and the music relapses into the melancholy yearnings of heretofore.'"—*The Land beyond the Forest*, vol. ii., pp. 122-4. Lond. 1888.

After the evidence thus furnished, argument is almost superfluous. The origin of music as the developed language of emotion seems to be no longer an inference but simply a description of the fact.

## II.—MENTAL ELABORATION.

By JAMES SULLY.

IN the following pages an attempt is made to present the several constituents in the process of Mental Elaboration in their connexion and interaction. Since mental elaboration shows itself most distinctly in the case of intellectual development, that is to say the formation of cognitions out of the primordial material of sensation, our description of the process will of course have to do primarily and mainly with intellective elaboration. The analysis here offered professes to supply all that is needed by way of addition to the elementary facts of sensation together with those reactions of attention which are now regarded as modifications of the motor reflexes organically connected with the processes of sensory stimulation. Sensations and such attention-reflexes being assumed, we have to ask what ultimately simple constituent processes are required to enable us to understand the general movement of intellectual elaboration, and further how their constituents are interwoven in the actual concrete tissues of our intellectual life.

These constituent processes appear to me to be reducible to three, *viz.* : Differentiation, Assimilation, and Association. We may conveniently deal with them in the order here indicated.

### I. DIFFERENTIATION.

By the term Differentiation the biologist means the gradual emergence or appearance of difference (heterogeneity) between one tissue or one organ and another as the development of an organism proceeds. The process of development, we are told, begins with a relatively simple or homogeneous structure, and the organism takes on more and more distinction and speciality of parts as the process of development advances.<sup>1</sup> Applying this idea to mind we can speak of differentiation as the emergence in consciousness of distinctness or speciality. Thus the infant's colour-sense, though, if a normal one, potentially including all shades of colour-quality, realises as yet but few if any qualitative varieties. The progress of

<sup>1</sup> This may be illustrated by the process of segmentation, or the self-division into segments, which marks the development of the ovum.

sense-development means primarily the substitution of a more and more varied order of sensations, or of a larger and larger number of different impressions; and it will be found that the whole development of intelligence consists in part in the advance of such differentiation.

It is commonly said that attention is in its general nature selectively isolating. When an infant first fixates an object, as a bright light, it virtually differentiates this impression from surrounding objects.<sup>1</sup> In other words, by this process of adjustment a separate and distinctive impression is secured. The peculiar character (quality, strength) of the impression begins to make itself known: definiteness of impression begins to be experienced. In a wide sense then all attention, as selective, isolating, and defining, is a process of differentiation.

[Of course it may be said that a vague differentiation must precede such special isolating adjustment. If the light did not differentially stimulate a particular area of the retina, and so differentially stimulate the mind, there would be no special reflex adjustment. It is evident however that this vague, incomplete differentiation would be of little service for the higher and fully conscious processes. Clear difference only begins to show itself when the process of attention is added, and its effect in defining the peculiar character of that which is attended to is realised.]

It follows that the physiological substratum of differentiation may be defined as consisting in unlike functional activity (either of the same or of different nervous elements) together with the isolating process of attention. Thus a distinct impression of a particular variety of colour or pitch of tone has for its nervous condition a particular mode of optical or acoustical nerve-excitation, and the reinforcement of this by the adjustive process of attention.<sup>2</sup> It must be added that while we may thus define the nervous conditions of two different sensations we cannot hope to find a nervous process answering to the further psychical activity to be spoken of presently, *viz.*, the apprehension of a relation of difference.]

Confining ourselves for the present to sensations or representative elements we may trace this process of differentiation or differential definition in various directions. At the beginning of life we may suppose that sensational conscious-

<sup>1</sup> It is important to note that this impression, as indeed every visual impression produced by an object, is really complex. But this fact of complexity need not here be considered.

<sup>2</sup> Dr. Ward appears to find a further physiological condition of differentiation in that 'restriction' of the nervous current which characterises the action of the special senses. See his article "Psychology," *Encyclop. Brit.*, xx., 46.

ness as a whole is a mass of undistinguished parts. The first broad distinctions to be introduced would be the generic differences between sensations of distinct classes, as a taste, a smell, &c. Along with this, and even prior to it, we may suppose the fundamental difference in feeling, *viz.*, pleasure and pain, to be marked off. The process of differentiation, or psychical segmentation, would reach a more advanced stage when different qualities of the same class began to be mentally separated, as different tastes, different colours, &c. Along with these distinctions of qualitative character, those of intensity, of volume or extensity, and of local character would gradually come to be noted. Thus, for example, different degrees of pressure, different extents of contact, and touches of different local character (at this, that and the other point) would be separately attended to.

This process of differentiation progresses gradually. Just as tastes are first differentiated from other classes of sensations before one taste is differentiated from another, so within the limits of the same special sense the process advances from broad to finer and finer distinctions. Thus we know from the way in which the colour-vocabulary grows in the case both of the individual and of the race that a red is distinguished as such before a particular shade of red, as scarlet or crimson, is distinctively noted.<sup>1</sup>

The course taken by this progressive movement of differentiation is modified by the forces which act upon and determine the directions of the attention. Hence it is far from being perfectly regular, and probably varies considerably in the case of man and other animals, as well as in that of different men. Superior strength and vivacity of impression count for much here. This is illustrated in the fact that the brightest and most stimulating colours (red and yellow) are the first to be singled out and recognised. Much depends too on the nature of the particular sensation as bearing on the special interests of the species or individual. Thus the dog first scents and particularises among smells that of his food, his master, &c. ; the horse singles out among colours that answering to wholesome herbage ; and so forth.

[The progress of differentiation is not so simple as is here represented. As already suggested, sensations or presentative elements do not occur apart but in groups or complexes. The animal and the child mark off colour as a constituent of a complex of impressions answering to a particular coloured form, as clover,

<sup>1</sup> This process of differentiation only advances a little way in the case of the organic sensations.

an orange. No doubt, this marking off of complexes involves a certain apprehension of the peculiar character of the several constituents. But such apprehension is very vague. Clear differentiation implies the isolation by attention of the constituent sensation itself. But this follows later. The child sees the apple and the orange some time before it is capable of an abstract attention to its colour. Dr. Ward describes the process of differentiation as the breaking up of a presentative *continuum* into discrete presentations. The term continuum seems so far appropriate here as it indicates the fact that sensation is given at first not as a system of distinct atoms but as a continuous whole, and that distinction is only introduced by the emergence of latent differences. It is evident however that the idea of a continuum as the presentation of difference in a scale of perfectly gradual change in the same direction only partially applies to sensation as a whole. Thus there is a continuous scale of intensity as well as of volume or extensity. As regards quality, it is wanting altogether in the case of different classes of sensation. We cannot pass from tastes to smells by any series of intermediate gradations. Nor even within the limits of one and the same sense does it apply universally. Thus though there is a continuum of colour- and tone-sensations, there is not a continuum of tastes or of smells.<sup>1]</sup>

*Differentiation and Discrimination.* We have thus far considered differentiation merely as a process of distinctively marking off or defining particular sensations. Here through special adjustments of attention different sensations come to be distinguished as this, that and the other. Such differentiation or particularisation of sensational character does not necessarily involve any consciousness or mental grasp of a relation of difference between one sensation and another. Still less does it include a clear apprehension of the precise feature, *e.g.*, intensity, quality, in which two sensations differ, or the extent of this difference. Such a clear apprehension or grasp of difference, as distinguished from a singling-out of and attending to different or distinct sensations, is best described as an act of conscious Discrimination.<sup>2</sup> Differentiation, in the first sense, precedes discrimination in mental development. A and B must be presented as two distinct impressions before we become conscious of the re-

<sup>1</sup> For Dr. Ward's views, see *loc. cit.*, pp. 42, 45.

<sup>2</sup> Discrimination is often used in the wider sense of Differentiation. But as we require a term to indicate the complete process of 'relating' or apprehending relation, it seems best to select Discrimination for this purpose.

lation A—B.<sup>1</sup> An animal low down in the scale may have differentiated sensations, that is be differentially impressed by this and that stimulus, *e.g.*, thermal or tactile, and yet never rise to a clear consciousness of a relation of difference.<sup>2</sup> Such an intellectual act or process of discrimination only becomes possible when sensations by repetition acquire a certain steadiness and persistence, and when attention is practised up to the point of a relational or comparative attention; *i.e.*, a simultaneous grasp of two impressions as two distinct, yet related, impressions.

True discrimination develops by gradual stages out of the process of differentiation just described. Thus we may suppose that a strong stimulating sound or light at the moment of its introduction is attended by a vague consciousness of change or transition: and this supplies the germ of discrimination. A child experiencing the change from darkness to light, from cold to heat, could hardly fail to note the change as such. This, however, is still a long way from a clear grasp of a precise relation of difference as defined above. The rapid disappearance of the receding experience under the superior interest of the new one would prevent the infant mind from attending to the two in their relation. A more favourable situation would be the simultaneous presentation of two strong and widely contrasting sensations, as two touches when the child happens to touch two unlike substances with the two hands, or two contrasting colours in juxtaposition.

*Law of Change or Relativity.* That consciousness involves change of psychical state, or has change as a fundamental condition, is indisputable. A dead level of sensation, without the least introduction of freshness or variation, would be indistinguishable from sleep. This fact of the dependence of mental life on change has been formulated under the head of the Law of Relativity.<sup>3</sup>

This law of change or variety finds its explanation in part in the very conditions of nervous action. Highly recuperated structures are capable of more vigorous func-

<sup>1</sup> This applies to all intellection as a relational or relating process. The mental apprehension of a relation of difference, likeness, or succession in sensations must be carefully distinguished from the experience of having two unlike, like, or successive impressions. Cp. Lotze, *Metaphysic*, p. 470.

<sup>2</sup> Cp. Romanes, *Mental Evolution in Animals*, chap. i.

<sup>3</sup> See Dr. Bain, *Mental and Moral Science*, p. 83; Hamilton expresses the same principle under the "Law of Variety," see Ward, *loc. cit.*, p. 49.



tion than partially fatigued and exhausted ones. Prolonged stimulation of a nervous structure is attended in certain cases, at least, with a falling-off in the intensity of the sensation.<sup>1</sup> Change of stimulation, on the other hand, by calling into play a fresh organ, ensures greater intensity in the psychical effect. Not only so, the frequent diversion of attention from one impression or region of impressions to another is necessary to its vigorous maintenance. This is strikingly illustrated in what has been called "the acquired incapacity" to attend to constant and unvarying impressions. The miller, after a time, fails to hear the noise of his mill. It is also illustrated in the fact that, when we go on attending to an impression, *e.g.*, one of bright colour, there is a falling-off in its intensity, which is presumably due to the slackening of the effort of attention.

This general truth has a bearing on the intellectual processes and on the feelings. The latter is illustrated in the well-known effects of novelty, contrast, rapid variation of impression in heightening feeling and the enjoyment of life. Here we are concerned with the bearing of change or relativity on the intellectual processes.

In considering this point, we must keep steadily in view the distinction emphasised above between change or difference and the consciousness of difference. The former (apart from any clear consciousness of difference) acts on the intellectual processes through the attention. Thus, when two strongly contrasting sounds succeed one another, the very fact of the change involves a special stimulus to the attention, so that the second sound is better defined. Similarly, when two contrasting colours are simultaneously presented, each serves as a contrast to stimulate attention to the other, and so both impressions become clearer. Is there any further effect? It has been supposed that the consciousness of difference or contrast that arises in this case serves to determine the peculiar quality of each impression. Thus black is seen to be black only when contrasted with white, or in its difference from white; bitter is tasted as such only in contrast to sweet, and so forth. This view seems, however, to overlook the fact that the special qualitative character of a sensation is determined by the particular psychophysical process involved in the sensation. The sensation blue would still be blue, though the eye were

<sup>1</sup> Stumpf points out that this decline in intensity is much more noticeable in certain classes of sensations than in others. It is hardly appreciable at all in the case of sounds. (*Tonpsychologie*, i., 18.)

blind to every other colour. If its blueness were not realised under these circumstances, it would be that the conditions of an isolating attention—variety, freshness of stimulation—were wanting. Change, contrast, do not determine the peculiar quality, intensity, &c., of our sensations. These are absolutely fixed. None the less the juxtaposition of contrasting impressions is one of the most effective ways of bringing home the precise character of each.<sup>1</sup>

[The idea that the quality of a sensation is determined by its apprehended relation or relations of difference with other sensations seems to find some support in the well-known fact, that certain classes of sensations are modified by a preceding or simultaneous stimulation of the same organ. Thus the psychophysical process corresponding to one sensation of temperature modifies the effect of a subsequent stimulus. A somewhat similar effect takes place in what is known as the phenomena of colour-contrast, successive and simultaneous, where one colour alters the effect of another colour by throwing it more into contrast with the first. It is probable however that these effects have a purely physiological cause, one nervous process somehow modifying the other. And in any case this modification of quality by contrast is very limited, and can only be viewed as an exceptional phenomenon.]

The apprehension of a particular sensation of a given quality, intensity, &c., is one thing, the apprehension of its relation to other sensations is something additional. At the same time, in actual consciousness at least the one is never found apart from the other. Relations of contrast are so important that they begin to be attended to very soon. And from attending to them we come in time to overlay the simple sensation with a network of relations. Thus a given sensation of cold is apprehended vaguely, at least in its relation to other and customary sensations of temperature. To the eye of an artist each colour tends to be localised in the colour-scale. That is to say, every colour-sensation is instantly overlaid by a whole system of relations of difference. This overlaying of sensations with ideas of relation is illustrated in a striking manner in our common distinctions of intensity—as loud, quiet, bright, dark—where the primary apprehension of intensity becomes modified by ideas of relation.]

<sup>1</sup> The law of relativity has been specially applied to the intensity of sensations by Wundt (*Phys. Psych.* i., 377 ff.), who seeks to formulate a general law of relation ("Gesetz der Beziehung") into which he incorporates the appreciation of intensity as defined by Weber's Law. On the whole question of relativity consult Bain, *Senses and Intellect*, pp. 9 and 321, and Ward, *loc. cit.*, pp. 49, 50. The various forms of the doctrine of relativity are carefully distinguished and examined by Stumpf, *Tonpsychologie*, i., 1-22.

## II. ASSIMILATION.

The second of the constituent processes entering into intellectual elaboration is known as Assimilation. This may be defined in its most general meaning as the process by which like sensations or other psychical contents attract one another and tend to combine or coalesce. In its higher form it involves a 'consciousness' or apprehension of a relation of similarity, and thus becomes one of the two leading intellectual functions coordinate with conscious discrimination or the apprehension of difference. As a coming together and a combining of presentative elements assimilation is clearly opposed to differentiation, which in itself tends to a marking-off and isolation of psychical contents. All assimilation is thus a mode of unification or integration.

*Psychological Nature of Likeness.* When we say that assimilation is the conjoining of like sensations, we mean by likeness any degree of similarity from the lowest degree of imperfect likeness which is just perceptible up to perfect likeness or psychical equality.<sup>1</sup> Two sensations may be appreciably like one another yet far from quite or completely similar, as in the case of two adjacent members of the colour- or tone-scale or two adjacent sounds in the scale of intensity or loudness. The relation of likeness is here regarded as a perfectly simple and fundamental relation, coordinate with dissimilarity or difference. Perfect likeness (of quality or intensity), it may be added, would have to be estimated for practical purposes by indistinguishableness when practised attention is closely directed to the sensations.

The distinction of perfect and imperfect likeness just spoken of has to do with *intensive* differences, or differences in degree of the likeness. In addition to these there are *extensive* differences or differences in the area of the likeness. Thus two colours may resemble one another *totally* in all points, tint, saturation, &c., or only *partially* in some one or more of these constituent features. A good deal of what we ordinarily mean by likeness, more particularly when we ascribe likeness to those complexes which we call 'things,' is of this partial character; and, as just shown, even in the case of so-called simple sensations, likeness resolves itself in many cases into partial likeness.

<sup>1</sup> The term 'identity' is sometimes used to indicate such perfect likeness. But the word is open to the objection that two sensations experienced at different times are not the 'same' in the sense in which a *thing* seen to-day is the same as the thing previously seen.

[According to the Herbartian psychologists the fundamental relations are not difference and similarity but identity or equality and inequality (*Gleichheit* and *Ungleichheit*). According to this view, imperfect likeness as above defined is no simple relation at all, but resolves itself in all cases into partial equality. Thus all assimilation is expressed by the formula  $AB - AC$ , where A represents the common identical element in two complexes. This view however seems based on speculative hypothesis, and is not in strict accordance with the facts so far as they are known. That imperfect likeness may in many cases be resolved into partial has been conceded above; but this cannot always be done. Physiological analysis does not enable us to say that two adjacent tones in the scale which are certainly like in pitch and more like than those separated by a wider interval have any common ingredient.<sup>1</sup> And, even if it could be made out that in all cases of like sensations there is a common ingredient, it could be urged that the apprehension of this likeness precedes by a considerable interval any power of abstract fixation or isolation of this ingredient. Thus children and even adults apprehend likeness between tones, as a note and its octave, and between two closely related colours, as scarlet and crimson red, without being in the least degree able to identify a common element in them.<sup>2</sup>

A word may be added on the physiological substratum of psychical similarity. It is said that such a substratum is supplied in the fact of the identity of nervous structure involved in the case of two sensations. This however only applies to the case where similarity is perfect. In the case of imperfect likeness we can hardly assume that the same nervous elements and the same mode of functional activity are involved. It is to be added that, even if we could thus clearly conceive of a nervous correlative of two like psychical elements, this would be far from supplying a physiological counterpart of the consciousness or apprehension of a relation of likeness.]

*Automatic Assimilation: Recognition.* The simplest form of assimilation is to be found in that process by which a present sensation (or sensation-complex) is re-apprehended or 'recognised' as something peculiar. This assimilation begins very early in life, and may be illustrated in the effect on the infant of recurring, interesting sensations of odour,

<sup>1</sup> It would be still less possible to determine a common element in two tones like though not perfectly like in intensity.

<sup>2</sup> The Herbartian view is ably criticised by Stumpf. He distinguishes between similarity of simples and of compounds, and argues that in the case of all sensations falling into a scale—tones, colours, temperatures—mere likeness (*i.e.*, imperfect likeness) is involved. (*Tompsychologie*, I., 111ff.)

sound, &c., as those of the mother. Such assimilation is automatic or 'unconscious' in the sense that there is no distinct recalling of a past sensation, apprehending of the relation of the present sensation to that. It involves, no doubt, a persistence of the previous sensation, and so a germ of what is called retentiveness, a property of mind to be dealt with presently. But the past sensation is not distinctly recalled under a representative form. What takes place is rather the coalescence of the trace or residuum of the past sensation with the present one, by reason of which coalescence this last gains in vividness and in definiteness.

This automatic assimilation by accumulation of traces plays an important part in early mental development. Recurring sensations, *i.e.*, the occurrence of like sensations or sensation-groups, is, indeed, a necessary condition of this development. A child must begin to bring together and class its sensations; and, indeed, by common consent, it begins to do this hastily and even recklessly, classing things which are only partially alike (provided the likeness is striking and interesting), and overlooks differences. All this shows that assimilation is a prerequisite of the growth of even the most rudimentary knowledge.<sup>1</sup>

A higher stage is reached when differences are sufficiently attended to to require a special isolating act of attention to the similar ingredient of the complex, as when a child recognises the mother's voice when she is playfully disguising it. This fixing of the attention on a similar feature or features in the midst of diverse elements involves a germ of the higher abstracting attention which is found to play so prominent a part in the later intellectual processes.

*Transition to Comparative Assimilation.* This last process forms a transition from automatic assimilation to conscious comparative assimilation where the relation of similarity begins to be attended to. Mere recognition, with its complete coalescence of the residua of past sensations with the present, does not imply such apprehension of relation. In the case of likeness, as in that of difference, such apprehension emerges gradually, and only becomes steady and clear with the advance of development.

This conscious apprehension of a relation of likeness may take its rise in one of two ways. The simpler and easier

<sup>1</sup> The effect of successive processes of assimilation or accumulation of traces in giving vividness to sensations was well brought out in Beneke's System of Psychology.

process would be the noting similarity between two simultaneous presentations, as when a child notes the image of its mother's face in a mirror. Such an unusual reduplication of a familiar object would act as a strong stimulus to the attention, and tend to arouse a vague apprehension of a relation of likeness.<sup>1</sup> The second starting-point in the development of such conscious grasp of similarity would be automatic assimilation. In a case where this was checked by the presence of an obstacle, as when a child was puzzled by seeing its mother in a new dress, there would be developed the impulse to separate off the residuum of old impression from the present impression with which it tends to coalesce, and to consciously adjust this last to the first; and this would involve a germ of comparison. Such a process, however, obviously presupposes the advance of another process to be spoken of presently, *viz.*, the distinct recalling or reproduction of past presentative elements under a representative form.<sup>2</sup>

*Relation of Differentiation to Assimilation.* The two processes of differentiation and assimilation, though, as we have seen, in a manner opposed one to another, are carried out together, and in close connexion. Since assimilation implies attention to a new sensation, it may be said in every case to involve a measure of differentiation. A child cannot assimilate a taste or touch till it mentally fixates, and so differentiates, this sensation. Further, the exactness of the assimilative process throughout waits on the advance of differentiation. Thus the child begins, as we have seen, by roughly classing different varieties of red as red, long before it more exactly classes a particular variety, as scarlet or plum-colour. Assimilation thus becomes close and exact in the measure in which distinction is introduced.

[We can now see better what is meant by saying that assimilation (likeness) precedes discrimination (difference) in the development of the child. Crude assimilation proceeds in advance of discrimination. Witness the daring of childish classification, as when it calls all males "dada," a rabbit "ba lamb," and so forth. On the other hand, assimilation as a precise process follows, or at least involves discrimination. Tastes, odours, colours, &c., become carefully assimilated or classed in proportion as their several kinds become distinctively apprehended.

<sup>1</sup> Cp. what was said above respecting the first development of conscious discrimination.

<sup>2</sup> I have dealt with the process of Comparative Assimilation in an article on "Comparison," *MIND*, vol. x., p. 489.

It may be added that while differentiation thus narrows and corrects assimilation, assimilation reacts on differentiation. It is, as we all know, through the interest awakened by the recurrence of partially old and familiar impressions that attention comes to be directed to these, and so the differentiating process to be carried a step further.<sup>1</sup>

Finally, it is to be remarked that the higher forms of each, conscious apprehension of difference and of likeness, involve one another. We can only consciously compare two sensation-complexes as like when we distinguish these as two, and so in a manner at least different.<sup>2</sup> On the other hand, we cannot discriminate things exactly, save when we recognise a common aspect under which we can compare them. To say that two things differ is to say that they differ in respect of a common attribute, as size, colour, local complexion.]

### III. ASSOCIATION.

In addition to the two processes, differentiation and assimilation, there is a third process involved in mental elaboration known as Association. By this is meant that process of psychical combination or integration which binds together presentative elements occurring together or in immediate succession. Thus, for example, the several sensations that a child receives together from one and the same object, as those of warmth, softness and smoothness from the mother's breast, become conjoined, tied together or integrated into one complex. Similarly, the successive visual and other impressions received in watching the preparation of its food, or undergoing the operations of dressing, bathing, &c., become conjoined or integrated into a series. It may be added that such integration has for its main condition, in addition to the co-presentation of two sensational elements either together, or in close succession, a mental reaction on these, either in the shape of a simultaneous grasp of them by attention, or of a movement of attention from the one to the other.<sup>3</sup>

This weaving together of the elements of experience (which is necessary to the very idea of experience as a system of connected parts) begins from the earliest moment,

<sup>1</sup> The effect of automatic assimilation in fixing the attention is well brought out in Herbart's doctrine of Apperception. See Mr. Stout's exposition, *MIND* No. 52.

<sup>2</sup> That is, at least, differing in their local or temporal character, if not in their qualitative aspect.

<sup>3</sup> Wundt, following Herbart, marks off Association from Assimilation under the head "Complication" (*op. cit.* ii. 369).



and runs on *pari passu* with the other processes just dealt with. At the same time, the effect of this process of associative integration only becomes clearly manifest when mental development has reached the point where reproduction of sensations becomes distinct. When we say that a mass of sensation-elements has been integrated, we imply that when next we experience a part of the aggregate this will tend to *recall*, that is, revive under a representative form, the rest of the aggregate. Thus we know that the sight and taste of the infant's food have become integrated when the former manifestly calls up a representation (expectation) of the latter. Psychical binding together, or association, always has reference to a subsequent process of mental reproduction.

And here we reach a point of our exposition at which it becomes necessary to say something more about the psychological nature of retentiveness, and the closely related process of reproduction.

*Retentiveness.* By Retention as a psychological phenomenon, is meant in general the fact that a sensation tends to persist, or to be followed by some analogous after-effect, when the process of stimulation has ceased. In its simplest form it shows itself in the temporary survival of a sensation in the shape of an 'after-sensation,' when the stimulus ceases to act, as when we retain an after-image of a bright object, as the sun's disc, some seconds after looking away from this. Here we suppose that the process of central excitation after having been occasioned by the peripheral stimulation is capable of being prolonged beyond this, just as a tight string will go on vibrating after the withdrawal of the force which set it in motion.

A much higher degree of retentiveness is shown where a sensation is not simply prolonged, but recalled after a considerable interval,<sup>1</sup> as when a hungry child recalls the sensations of feeding. Here it is evident retentiveness means something different from what it meant in the case of the temporarily prolonged or surviving sensation. The sensation recalled is not supposed to have persisted, at least as a conscious sensation, during the interval. How then are we to conceive of the retention of it during this period? Here two answers at once occur. (1) It has persisted as a true psychical phenomenon, *i.e.*, a sensation; only, having fallen below the threshold of consciousness, it has failed to make its

<sup>1</sup> There is an intermediate case between the after-sensation and the revival after a considerable interval; but we need not consider this here.

existence known. (2) It has not existed at all as a psychical phenomenon, but its 'retention' is referrible exclusively to the persistence of certain changes, changes variously spoken of as physiological 'traces' or 'dispositions' in the nervous centres. In other words, it has been retained 'potentially' in the sense that its nervous conditions or substratum have been rendered permanent.

[The determination of this point is, as is well known, one of the 'cruces' of psychology. That sensations persist as psychical phenomena seems a necessity of thought to those who, like Leibniz and the Herbartians, conceive of the mind as a distinct spiritual substance. On this view, all spiritual activity seems to be indestructible, like the energy of the physical world. According to this way of envisaging the matter, it is not retention but loss or forgetfulness that requires to be accounted for.<sup>1</sup> On the other hand, it has been urged that psychological retentiveness is only a special case of a general biological function; and that all organs preserve either as an ingrained change of structure, or, at least, as a permanently acquired physiological disposition, the traces or residua of their previous activity. On this view, psychological retention is merely the subjective correlative of a physiological process, *viz.*, the cerebral organisation of the traces of past functional activity.<sup>2</sup>

How far this second view will help us to understand all that is meant by the conscious processes of memory and recollection, cannot be discussed here. It may be as well to point out, however, even in this sketch, that there is no greater difficulty in understanding how a persistent cerebral action or disposition should secure the revival of a sensation than how the original peripherally induced cerebral excitation occasioned the original sensation itself. The transition from physiological conditions to psychological results is just as difficult in the one case as in the other.]

*Reproduction.* The process of Reproduction is something added to mere retention since it implies the re-appearance 'in consciousness' of the impression, no longer, indeed, as a sensation, but under a new representative form.

This reproduction, as already hinted, appears in a crude or nascent form in automatic assimilation. When a new sensation or sensation-complex is recognised as something

<sup>1</sup> See Hamilton, *Lectures on Metaphysics*, ii., Lect. 30, and Ward, article, "Psychology," p. 47.

<sup>2</sup> It seems to be a question whether such a physiological disposition involves a prolongation of the functional activity in a weakened or nascent form; see Wundt, *op. cit.* ii., 381, and *op. cit.* article, "Memory," by W. H. Burnham, in *American Journal of Psychology*, vol. ii., p. 571, &c.

familiar, it is because of the revival and coalescence with the presentation of representative residua of past sensations. Here, however, as pointed out above, the revival is nascent and incomplete. The perfect revival of a presentation involves the absence of a like presentation at the moment. We cannot recall a colour, and see a colour at the same moment, just because the presentation and the corresponding representation irresistibly tend to coalesce.

This perfect form of revival takes place by means of some connected presentation, and hence is known as Associative Revival or Suggestion.<sup>1</sup>

Such associative revival begins as soon as sensations by repetition and cumulation of residua have acquired the requisite degree of after-persistence, and association has knit together with sufficient firmness different parts of a sensation-complex. Thus the infant's first observable revivals, *e.g.*, direct suggestions of eating, bathing, &c., illustrate at once the persistence and the weaving together of elements.

This associative revival, like the processes of differentiation and assimilation, appears under an earlier implicit, and a later and more explicit form. In the connexions which enter into our every-day perceptions, we have a number of disparate presentative elements (tactile, visual, &c.) solidified in an inseparable mass. Here though, as we shall see, we can trace the presence of representative elements revived by the presentative, it is impossible to separate them clearly in consciousness, and, in some cases, they tend to blend, in one indistinguishable mass, by what has been called by some psychologists "Inseparable Association".<sup>2</sup> In the sphere of ideation, on the other hand, imagination and thought, we have a succession or train of distinct representations. And it is in these successions of ideas that we see the action of Association illustrated most plainly.

Without attempting here a complete account of the law of this associative revival, we may just point to its two main conditions.

<sup>1</sup> The Herbartian psychologists distinguish the first incomplete form of reproduction in automatic assimilation or recognition as "Immediate Reproduction," marking it off from Mediate Reproduction, that is to say, reproduction by association and suggestion. It may be added that it is possible to conceive of a third form of revival, *viz.*, spontaneous revival, or the resurgence of a presentative element, apart from suggestion. This is the "freely ascending presentation" of Volkmann. See Mr. Whittaker's exposition of Volkmann's Psychology, *MIND*, No. 59, p. 337.

<sup>2</sup> On the nature of Inseparable Association, see Prof. Croom Robertson's article, "Association," *Encyclopedia Britannica*, and Jas. Mill's *Analysis of the Human Mind*, i., 93.

(1) In the first place, then, retention is determined by the intensity and distinctness of the presentative element. Now the fixing of attention tends directly to the increase of each aspect. Retention may thus be said to depend on the closeness of the act of attention and the consequent degree of differentiation. Hence one reason why the organic sensations and those of the lower special senses are not readily revivable. We cannot isolate and differentiate elements of taste as we can analyse sounds, or distinguish simultaneously a number of tactile or visual sensations.<sup>1</sup> It follows that feeling which, in the form of interest, is the great sustainer of the process of attention, is a main promoter of retention. Those presentations are, in general, readily revived which interest or excite the mind by their novelty, their beauty, their moving associations, and so forth.

(2) The other main condition of associative reproduction is the repeated and uniform recurrence of the associated elements as parts of one co-presentation. This second condition, usually dealt with under the head of repetition, will be found to be all-important in the work of associative integration. The child will, no doubt, tend to integrate elements that are only occasionally and accidentally co-presented, as when it looks into empty tea-cups for sugar after finding that dainty in one. But experience is ever correcting this tendency, so as to bring the process of integration into agreement with the recurring juxtapositions and what we call the fixed order of events in the external world.

It remains to say a word on the probable physiological conditions of this revival. Such revival is commonly supposed to involve and to depend upon the re-excitation of the central structures originally excited by a peripheral stimulation.<sup>2</sup> Such re-excitation is further supposed to be similar in its character to the original excitation, though of a less wide extent than this, since it does not involve the peripheral region of the nervous system.

In the case of that partial or nascent revival which takes place in assimilation we have to conceive of the nervous process somewhat after this manner. A given central element or cluster of elements is re-excited to a functional

<sup>1</sup> Dr. Bain makes retention depend directly on discrimination (*Mental and Moral Science*, i. 96). The exact relation of discrimination to retention is carefully discussed by Stumpf, *Topsychologie*, i. 287-9.

<sup>2</sup> If we suppose retention to involve a persistent state of suppressed or nascent excitation in the central elements involved, we may say that revival depends on a sufficient intensification of this nascent excitation.

activity similar to that of a previous excitation. The residuum of this previous activity or surviving 'physiological disposition' somehow combines with and modifies the new activity; which blending of nervous processes has for its psychical correlative the peculiar mode of consciousness known as recognition, sense of familiarity, or identification.

[Here our physiological psychology seems to be more than usually conjectural. It is not easy to represent any process of overlapping or summation of actions in the same nervous elements which would form a physical basis of the peculiar psychical phenomenon involved in all assimilation. It is to be added however that a mere process of identifying a sensation is an abstract conception never realised. In all assimilation it is evident some points of difference make themselves known as well, and in all assimilative revival there is at least a tendency to reinstate some of the differentiating concomitants of the past sensation. According to this view, then, the nervous process in assimilation is more complex than that just supposed. There are two nervous actions, the new excitation and the re-excitation, involving different elements or functional activities and only overlapping and coalescing at particular points.]

In the case of complete or Associative Revival the physiological process will be somewhat different. Here we suppose that the excitation of a central element (or group of elements), P, answering to the reviving stimulus, occasions by means of special lines of nervous connexion a re-excitation of a second element, Q, more or less remote from P, which answers to the revived psychical content. Thus, following the common view, we conceive that, when the sight of the milk calls up in the child's mind the idea or representation of the taste and of the appropriate movements, the excitation of the child's visual centre transmits itself along certain nervous paths to the centres of taste and movement, producing a re-excitation of these centres.

[This view obviously assumes that the nervous centres of sensation and of ideation (representation) are the same; and physiological opinion appears to be tending towards this conclusion. The paths of connexion by which excitation is thus transmitted along definite lines are supposed to be partly laid down in the original structure of the brain, though largely evolved in connexion with the life-experience of the individual. As to the exact manner in which they arise, we are as yet very much in the dark. Although association is of all the psychical processes that which seems to lend itself best to translation into physio-

logical terms, it cannot be said that the nature of the nervous changes involved has been fully elucidated. The fact that a concurrent stimulation of two points P and Q leads to a subsequently increased propagation of excitation from one point to another can only be fully explained when we understand the whole subject of irradiation of nervous excitation, together with its restriction or inhibition, much better than we do as yet.<sup>1</sup>

*Unity of Elaborative Process.* We have appeared by the order of our exposition to suggest that these three constituent processes follow one another. But this does not correspond with the facts. All three processes are closely inter-connected. We have already seen this in the case of the two processes differentiation and assimilation. It now remains to show the same thing with respect to each of these and the third process.

Beginning with differentiation it is easy to see that it goes on hand in hand with integration. To begin with, a vague incipient differentiation is involved in integration. Thus, the child must vaguely mark off the sensations warm, soft, smooth, from one another before it can be said to integrate them at all. At the same time this differentiation of constituent sensations is only rudimentary. The child is able to clearly mark off a sensation-complex as such before it differentiates a single sensation. Thus the complex warm, smooth, soft, is definitely attended to as a whole before the comparatively abstract apprehension of warm by itself is reached. This is sufficiently attested by the fact that even after the child can use words, it names things (complexes) some time before it can name single qualities. It is only when experience has advanced a stage, bringing up constituent elements in comparative isolation and in different (partially like) complexes, that the child perfectly differentiates, that is, renders perfectly definite the constituent sensations themselves. Thus the sensation warm becomes definite only when it appears in the different complexes answering to the mother's breast, the bath, &c.

[This view that the child apprehends the complex before it apprehends its constituents may seem paradoxical at first, and to contradict what was said above about the tendency to assimilate things on the ground of partial likeness and by overlooking differences. There is, however, no real contradiction here. What

<sup>1</sup> For an ingenious hypothetical account of the formation of such nervous channels or lines of least resistance see H. Spencer, *Principles of Psychology*, i. 515 ff., 577 ff.; cp. Wundt, *Physiol. Psychologie*, ii. 381 ff.

really happens is this. There is first a vague differentiation of a group in which some constituents as of greatest interest in all cases stand out prominently, *e.g.*, the brightness (lustre) of the eyes in the mother's face-complex. This vague apprehension becomes clearer by repetition of the complex (automatic assimilation) and, still more, by more minute analytic attention to details. Here it is that variation in the arrangement of the constituents and the process of partial or analytic assimilation becomes so important. Thus the child gets a definite sensation, warm, by experiencing it not merely along with the other interesting sensations, soft and smooth, but also in comparative isolation, as when held near the fire, or as an element in another complex, *e.g.*, the bath. All this goes to show how very abstract a supposition is the common one of psychologists that mental elaboration begins by weaving together a number of ready-made elementary sensations.<sup>1</sup>

If now we inquire into the relation of assimilation to association, we find that the two proceed concurrently as organically connected processes or parts of one process.

It follows, to begin with, from what has just been said that automatic assimilation begins with a complex coherent mass rather than with its constituent parts. Thus the child assimilates the sensation warm as an ingredient of a complex before it assimilates it separately.

If now we look at the higher process of association which involves a distinct representation or reproduction of sensations, we find that automatic assimilation forms an essential factor in the whole operation. Thus, before the child can, upon seeing the milk, recall the taste, &c., it must assimilate the visual or presentative element, *viz.*, the white colour, &c. Assimilation is here the initial step of the whole process.

[This may be symbolised thus—

$$\begin{array}{c} V \\ | \\ (v) t \dots \end{array}$$

where V stands for the presentative (visual) element, (v) for the residuum of past similar impressions which is excited by and at once coalesces with V, and *t* . . . for the distinct representative elements, taste, &c.

According to some, assimilation is not a distinct process, but only a part of the process of integration or association. This point can only be properly discussed in connexion with a full

<sup>1</sup> Cp. Ward, *loc. cit.*, p. 45. A rather subtle point connected with the relation of differentiation to association is whether two like sensations can become differentiated by taking on unlike associative adjuncts. This cannot well be discussed in this bare sketch of the elaborative process.



exposition of the processes of ideation. Here it must suffice to point out that, while always found together, they serve to mark off two distinct directions of the elaborative process. Assimilation, even in its lower automatic form, answers to the depth of the combining process, integration to the breadth or extent of it. And these two do not necessarily proceed *pari passu*. As we all know, where a number of partially like things are assimilated on the ground of a common constituent, the assimilative or classing process tends to exclude the revival of the several integrated concomitants. A familiar form, a familiar name, is associated with a rich variety of impressions answering to the various circumstances in which we have seen or met with it, &c. But, just because these are not uniform but variable concomitants, they neutralise one another's tendency to reappear in consciousness.]

It may be added that retentiveness, which is found to be the fundamental condition of associative reproduction, must be assumed to be co-operating throughout the process of elaboration. It has been pointed out by more than one psychologist that the simplest act of conscious discrimination—e.g., warm from a preceding cold—involves, at least, a momentary persistence of the antecedent sensation. Assimilation, as has been remarked, not only involves retention, but is the first and simplest manifestation of it under the form of a revived sensation.

The importance of retentiveness as a condition of elaboration may be seen in another way. Each of its constituent processes advances gradually, the new and higher stage presupposing and depending upon the lower stages. Thus each successive differentiation renders possible a higher degree of differentiation. For example, by distinguishing the colour blue, the child takes a step in the direction of distinguishing particular varieties of blue.<sup>1</sup> This progressive improvement of psychical activity has for its main condition retentiveness. The common maxims of education, "Exercise strengthens faculty," "Practice makes perfect," illustrate this fundamental fact of our psychical life, *viz.*, that the results of our several actions persist, rendering a renewal of these actions easier and also contributing to the development of higher forms of activity.

<sup>1</sup> This is well illustrated by Dr. Ward, *loc. cit.*, p. 46, whose remarks should be read as supplementary to what Dr. Bain says on the dependence of retention on discrimination, *Compendium*, p. 96.

### III.—VOLKMANN'S PSYCHOLOGY. (II.)<sup>1</sup>

By THOMAS WHITTAKER.

HAVING dealt synthetically with the simpler mental processes as deduced from "laws of interaction" applied to the elements of mind, Volkmann goes on, in his second volume, to deal analytically with actual mind in its complexity. First he seeks to resolve into their elements the mental "forms" of Time and Space, and the Perceptions that appear under those forms. Next, the psychological differentiation of the Ego from the Non-ego is traced out. Lastly, the phases of developed mind known as Thought, Feeling, Desire and Will, are marked off from one another and successively analysed from the points of view already gained.

The psychological problem of Time and Space, as stated by Volkmann, is, How are the time- and space-forms developed out of presentations? The succession of presentations, he premises in dealing with time, does not itself constitute the presentation of succession. Primarily, he finds, the activity that brings succession to consciousness is the presenting of a sensation in its contrast to a reproduction. The reproduction "strives against" the present sensation, and this striving is accompanied by desire. Through the feelings of "no more" and "not yet," we become conscious of time. The source of the strength both of these feelings and of the consciousness of time involved in them is the desire for a present satisfaction of sense not given in the mere reproduction.

As in successive presentation there is originally no presentation of succession, so in the mere consciousness of the present as such there is no presentation of duration. We only come to know that the present persists by its striving against an increasing tension of the future. The feeling of "still there" is the feeling of duration.

Different "time-series" stand at first out of relation to one another; but from the "full" the "empty" time-series is formed by interaction of different series; and this last is produced beyond all limits so as to become what is called "the idea of eternity," which is in reality the *attempt*

<sup>1</sup> Concluded from No. 59.

to represent in an intuition the "before-and-after" that constitutes time. At length, by hypostatising the form that we find everywhere in the perceptions of the "external" as of the "internal" sense, we get "time-in-itself" or "objective time". The time-series, which was at first *a* time, then *my* time, becomes at last *Time*. The time-series, originally discrete, by the assumption of the objective character becomes a continuum.

Coexistence of presentations does not immediately give the presentation of coexistence, any more than succession of presentations gives the presentation of succession. Presentations, indeed, in order to be presented "beside one another," must be actually not "beside one another" (*neben einander*) but "in one another" (*in einander*) as "simultaneous states of the same simple being". In spatial presentation, different presentations are united in the same act, yet distinguished. To be spatially presented, presentations must be terms of a series; for only by development of the form of a series can they be prevented from falling into the unity of a total impression. In the second place, they must mutually reproduce one another to the full degree of clearness. This condition is satisfied when the terms of the series can reverse their order; when the same series can be brought to flow off in the two opposite directions. Of space as of time we become conscious only through an emotion; but whereas in the case of time the emotion is fixed in its whole intensity in one presentation and therefore becomes desire, in the case of space it broadens out over both of two serially connected presentations and remains mere feeling. Toned sensations predispose to the assumption of the time-form, untoned sensations to the assumption of the space-form.

The elements from which our presentation of tactile space originates are sensations of pressure and muscular sensations. The pressure-sense is capable of developing the space-presentation independently by means of its own series; but the concurrence of the two kinds of series makes tactile space what it actually is. The tactile limbs (as well as the eye) owe the greatest part of their space-developments to their mobility, which makes possible varied combinations of their specific sensations with simultaneous muscular sensations. Where pressure-sensations and muscular sensations concur, the latter, as a rule, take the lead.

Discussing the conception of the "local sign," Volkmann contends that this ought to be regarded as consisting simply in the "peculiar colouring, conditioned by the particularity

of the place of excitation, of the content of sensation itself". When it is viewed in this way, the difficulties of the conception vanish. Of course the local sign is not to be thought of as a direct feeling of locality existing beside the special *quale* of the sensation.

Various abstract suppositions having been made as to the conditions of vision (a single motionless eye viewing a monochromatic motionless surface, for example, being first supposed), and the factors present in normal vision restored one by one, it is found that space-series can be formed visually only by the combination of colour-sensations with the muscular sensations derived from the movements of the eye. The space-form of the muscular sensations is carried over to the colour-sensations, as in the case of tactile space it is carried over to the pressure-sensations. In visual space, however, it more unconditionally takes the lead. For the qualities of the colour-sense, under the actual conditions of their reception, are not uniformly graduated like those of the pressure-sense; hence, no space-presentation could be formed by series of colour-sensations alone.

"The space-form is in no way the prerogative of a special class of sensations, but develops itself uniformly wherever the conditions of its development are offered;" these conditions being the existence of "series" and their reversibility. The musical scale, for example, is presented under the form of space—not, indeed, the space of the external world, but a space of its own. Assumption of the space-form is especially favoured when muscular sensations co-operate—as, for example, in the case of one who sings the scale up and down. The reason why series of notes so seldom raise themselves to the space-form is that "the space-schema of the muscular, pressure and visual sensations is somatically pre-formed, while the tone-scale has to be constructed by an act of comparison".

The surface is a "tissue of space-series". It involves consciousness of a second dimension, because to the consciousness of the two opposite directions of co-existence within the single space-series, that of the co-existence of the series among one another is added. The surface rises to the figure through our becoming conscious of the limit. Presentation of the limit is due to arrest in the passage of the eye from one colour to another. When there is a difference of colours on a surface, the eye learns to move along the boundary so as to avoid the monotony of the "ground" and maintain itself at the maximum of excitation by the contrast. The field of view having been divided up, deter-

mination in the direction of limitation suffices to raise the surface into the figure.

When, along with one of the presentations constituting a surface, another is presented in an order of co-existence that coincides with no order in the surface, the starting-point is given for the presentation of space of three dimensions, and for that "closed-off interweaving of surfaces among one another" which constitutes Body. Elements out of which these presentations can arise are the muscular sensations of the hand, and, to a less extent, of the other freely-moving tactile limbs. Let us imagine a person with vision, but without sense of touch, and with a muscular sense confined to the eye. Would such a person form any idea of the third dimension? Of the factors that seem at first to offer themselves for the development of the idea of distance, only two—the movements of accommodation of the single eye, and of convergence in binocular vision—need serious consideration; and these, when examined, are found not to make the presentation of distance possible in the absence of everything but visual experience. In combined sight and touch, accordingly, the muscular sensations of the hand take the lead in developing the presentation of the third dimension.

"Empty space-series" are formed by mutual suppression of particular qualities and local tones, with preservation only of consciousness of the number and degrees of fusion of the terms of the series. They are first formed on our own body, as is shown by the names of measures, such as foot, span, &c. "Our own body is for the representing of empty space what our own life is for the representing of empty time." Space-presentation having the number and sequence of its terms somatically pre-formed, our empty space-series generally rise to greater precision than our empty time-series. When our empty space-series have received the proper degree of mobility, almost every positing of a final term serves only as a point of attachment for the evolution of a new series; every limit is only a demand to go further. Thus, the empty space-series is freed from every determinate limit. "Infinite space" can, of course, as little be positively represented as infinite time, and its negative significance is less than that of infinite time. In trying to represent to ourselves an infinite space-series, we think of it as one that it would take an infinite time to measure. The order of co-existence that our sensations take upon them independently of us is an order that we seem to find given, and accordingly place where we place the content of our sensations, *viz.*, in the external world; hence the notion of

"objective space". From empty objective space the filled spaces occupied by external things seem to us to proceed by limitation and separation. It thus appears as the *præ* of objects. "Out of all relations to this space stand the spaces in which we order our conceptions or figure our imaginations; and since nothing prevents us from constructing these spaces also beyond all determinate limits, it is a paradoxical but true thought that there is more than one infinite space." Strictly speaking, every sense constructs its own space. That the spaces of different senses flow together into the space of the external world has its ground merely in the simultaneity of the constructions. The relative "emptiness" of the muscular sensation in itself and previous to that collision of qualities by which "empty" series are formed, makes it specially adapted to develop the presentation of the line.

For the discussion of the measurement of space and the estimation of magnitude, it is premised—(1) that the magnitude of our space-series cannot be compared with the magnitude of the "object," the contrast of "real and apparent magnitude" only meaning contrast of the constant magnitude of the space-series of touch with the changing magnitudes of visual space-series; and (2) that our estimate of the magnitude of space-series becomes very uncertain in the absence of comparison with the known magnitudes of sensation-complexes that are present. Several propositions are then arrived at as to the psychological causes of the variation of our judgments on the magnitude of different "space-series" according to the number of their sensational elements, the intensity of particular sensations, &c.

Space of Time (*Zeitraum*), Motion, Number and Intuition are next discussed. The presentation of a "space of time" is found to consist in "the spatial apprehension of a time-series". In the presentation of motion, on the other hand, the spatial is apprehended under the form of time. As duration is known only in contrast to sequence, so rest is known only in contrast to motion. The presentation of number is an abstract product of an operation common to the forms of space and time. The conditions of its origin are—(1) that a series should be given of which the terms are qualitatively like or are taken as qualitatively like, (2) the emergence and holding fast of the presentation of the single term, (3) the measuring-off of the series by means of the term that is held fast, (4) the comprehension of the measurements as a

whole. Number is not to be supposed to arise from the repetition of a unity already known as a unity ; for unity is itself a number, and comes to consciousness along with the other numbers, or possibly even later. To measure our series, indeed, we need an undecomposed part ; but unity of presentation is not, to begin with, the presentation of unity. A clear presentation of unity is arrived at for the most part only by comparison of such already measured magnitudes as differ by the quantity of a single measurement. Thus if the other numbers are multipliers, unity is as a rule a difference. Those sensation-complexes of which the elements have taken on the form of time or space may be called Intuitions. Number is not an intuition. The result of the analysis of time and space so far may be thus formulated : Out of sensations intuitions are evolved in consequence of the properties immanent in the sensations.

The "localisation" of sensations in the bodily organism, notwithstanding its apparent primitiveness, is a secondary phenomenon. A sensation at first unlocalised receives its space-determination from the reproductive activity that brings it into union with a presentation that has already found its place in the "space-scheme" of pressure-sensations by which we represent the body. Primitively all is vague. By degrees temperature-sensations, organic sensations, &c., become definitely ordered in relation with the interwoven series of sensations composing the surface of the body, and are then said to be "localised".

While localisation goes on in the region of the more strongly toned sensations, "projection," or the assignment of sensations to the external world, goes on simultaneously in the region of toneless sensations. Of projection there are three conditions : (1) a sensation that enters into the intuition of the body, (2) a second sensation, which is not localised, (3) a space-series that inserts itself between the two. Usually these three functions are taken upon them by three classes of sensations : (1) a pressure-sensation marks out the place on the body, (2) a contact-sensation indicates the external thing, and (3) the muscular sense constructs the space-series between the two. Primarily and immediately only sensations of touch are projected. The sense of sight supports itself in its projections on the sense of touch.

Projection does not of itself suffice to complete the presentation of the External Thing as *thing*. For this the conditions primarily required are—projection and consciousness of dependence in having the sensation. Neither of these is sufficient by itself. If a localised sensation is to



become a position on the body, the space-schema in which it is received must be thought of as something that comes to meet the changing sensation and outlasts it; and if the projection of the sensation of hardness is to become the presentation of a projected hard thing, the consciousness of a permanent ground of sensation must add itself at the place of projection to the temporary sensation of contact. On the other hand, the mere feeling of being conditioned by something else is not sufficient of itself to develop the presentation of the external thing. What makes the external thing an external thing is the union of both moments, that is, the constant appearance of the feeling of dependence at a constant place of external space, or "the determination of the *other* by the *outer*". This determination is wanting to the presentation of our own body. Hence if the body becomes a "thing" it does not become an "external thing". For the complete development of the presentation of the external thing two other conditions are to be added: (1) that not single sensations of touch but "total contact-images, *i.e.*, contact intuitions" are projected; (2) that visual and other sensations are projected simultaneously with sensations of touch. The heterogeneous sensations we project appear before us in constant groupings, and changes of time-association with other presentations isolate the groups. For fusion of projected sensations into a total presentation, not only likeness of position in time but also likeness of position in space is necessary. Thus there is no contradiction in one of two simultaneous sensations being projected and the other localised. The sense of touch is the only one that seems to mark out the thing as such immediately on the side of its reality and not of an adhering quality. If we signify by the term Perception the highest form that intuition assumes by its projection, we may briefly formulate the result so far thus: Certain sensations develop into intuitions and certain intuitions into perceptions.

An important part of what is called Illusion consists in wrong localisation or projection. Of illusions in general there are two classes—*viz.*, "illusions of internal perception" and "illusions of sense". In illusions of the first class we assign to a presentation (which, as a particular phenomenon, is no illusion) a predicate from among psychical modes of occurrence which does not belong to it. An illusion of the second class consists in this, that in the particular case localisations and projections are made which either cannot maintain themselves at all, or cannot maintain themselves in the

manner in which they are made, against the harmonising mass of other localisations and projections. "The possibility of illusions of the second kind rests on an illusion of the first kind; for the fault in localisation and projection presupposes localisation and projection in general; but that a presentation should appear to us not as a presentation, but as something else, is an illusion of internal perception. Let this substitution be once ratified, however, then only the particular case can be regarded as an illusion of sense where either an unpermitted or a false use is made of the conceded right of externalising a presentation." Illusions of sense are divided into "hallucinations" and "illusions" proper. In hallucinations, mere reproductions are taken for sensations, and as such localised or projected, when they ought not to be localised or projected at all. In illusions properly so called, either localisation and projection are interchanged, or within the sphere of one of them a wrong position is assigned to the particular presentation. There are cases on the borderland of illusion and hallucination where a sensation is the starting-point, but a reproduction called up by this sensation is projected. Of these cases there are two classes: (1) where the reproduction merely alters the content of the sensation, which is itself rightly projected; (2) where the sensation merely serves to confer its own "liveliness" on the reproduction, which is falsely projected. Illusions of the first of these kinds are scarcely "illusions of sense" at all, but ought rather to be classed as errors of internal perception. Those of the second kind are essentially hallucinations. That transformation of reproduction into sensation in which the essence of hallucination consists, may be brought about in two ways: either (1) the reproduction annexes to itself the degree of liveliness of a sensation already present, or (2) it sets going by its intensity a somatic excitation, which then acts as a centripetal stimulus, and associates sensation with reproduction. Hallucinations of the second class constitute so-called "visions".

The presentation of the Ego, to which Volkmann now proceeds, he views as developing itself in three stages. In its first stage of development it is the presentation of "the sentient and desiring body," to which are opposed as Non-ego external things. The Ego of the second stage is "the consciousness of the representing and desiring interior". The bearer of consciousness is for us at this stage internal because organic sensations are associated with the feelings by which it responds to presentations. The specific Non-ego of this

stage is the presentation "as image of the external thing". To the feeling and desiring interior is opposed "the, in itself, indifferent presentation". The "interior" is related to the images of things as the body to things; from them come its feelings, to them its desires are directed. The body as opposed to the interior is now external—an antagonism that reaches its full degree of sharpness in the next period. The third stage of development is that of "the Ego as thinking and willing subject," to which is opposed as object "the thought". Representation has now developed into conception and desire into will. There is interaction of thought with "the fixed kernel of our interior". Of this interaction (as of the interaction of the former stage) we become conscious through emotions, which, though less toned, are still not without some resonance of organic feelings. Thought appears as a product of the spontaneity of the subject, and the body, at this stage, is altogether expelled from the presentation of the Ego. At all three stages the development of ideas of the "foreign Ego" runs parallel in consciousness with that of our own Ego.

The Ego is nothing but a "psychical phenomenon". Its "presentation" is not the representation of a being or of a combination of beings. It is the soul that is a being; and the soul is pre-supposed metaphysically, not arrived at by psychological analysis. Nor has the "Ego-presentation" any determinate content. It is merely the becoming conscious of an interaction within an immeasurable presentation-complex; and the presentation that has and knows all others is itself quite indeterminate, being known only as "a point indicated by a manifold presentative activity". From this indeterminate Ego is to be distinguished "the empirical Ego" of each person, which is not absolutely indeterminate, but gives a special "total impression" depending on temperament, history, &c. In different persons, for example, the empirical Ego has predominately the character of one or other of the three stages of development of the Ego-presentation. For these are not periods of a single history in the sense that one period ends where another begins, but to a certain extent independent histories which, after successively starting, proceed for a time parallel with one another. Accordingly, all sorts of combinations of different degrees of advance of the different histories may be imagined in different persons, and even in different "presentation-circles" of the same person. To the empirical Ego "the time-series of life," or its total impression as called up in the present, may almost be taken as equivalent.

"Internal perception" involves three things: (1) the becoming conscious of a presentation; (2) the becoming conscious of its presentative activity; (3) the becoming conscious of the belonging of this presentative activity to the Ego. The real occurrence behind the appearance of the Ego's knowledge of the presentation is the soul's becoming conscious of an interaction between one of its presentations and the most ramified of its presentation-masses. "As the Ego first arrived at development by differentiation from the Non-ego, internal perception now re-integrates this diremption by setting the Non-ego in continuity with the Ego." It is through internal perception that the Ego at last becomes the central point of the whole life of presentation. The Ego, accordingly, may now be defined as "the subject of internal perception".

While internal perception takes place in "the subjective sphere of presentation" and ends with the judgment, 'I have A,' the process of "Apperception," which has now to be considered, takes place in "the objective sphere of presentation" and ends with the judgment, 'A is Z'. Apperception is nothing but the fusion of a new, isolated presentation-mass with an old one superior to it in extent and internal equilibrium; if the two are not conformable to begin with, then after transformation of one by the other. Internal perception and apperception are thus only two sides of the same process, *viz.*, "reaction of the old upon the new". One of the two may, nevertheless, in special circumstances, entirely give place to the other. In deep thought that follows only the content of presentations, internal perception disappears; in strong feeling, while knowledge of the feeling—that is to say, its internal perception—remains, "apperception" of it by the maxims that are applicable disappears. When the new is quite conformable to the old, it is apperceived without internal perception; when it is unconformable it is internally perceived without apperception. In psychological observation, apperception is internally perceived and internal perception apperceived.

To be "attentive" to something is to hold back a presentation, or a series or mass of presentations, from "sinking". Attention is "sensible" when its condition is the duration of a somatic stimulus, "intellectual" when its condition is an activity of psychical "aids". Voluntary attention is not to be added as a third kind. "Attention" is a state, which may or may not be brought on voluntarily by the voluntary bringing on of its conditions, but, once brought on, is either sensible or intellectual. Of intellectual attention the most

eminent case is when the giving of an "aid" is due to an apperceiving presentation-mass. All that excites and develops in us apperceiving masses finds attention. The relation of a presentation to the ruling presentation-masses of the Ego being described as the "interest" which the subject brings to the presentation, it may be said tautologically that "we bring attention to all that interests us".

"Self-consciousness" may be defined as "internal perception within the Ego". From the wide circuit of presentations that is the basis of our consciousness of the Ego, two different parts or modifications take up a position outside and opposite one another, like subject and object in internal perception; both presentation-masses then return into the totality of the Ego-presentation, and are known as parts of the same continuum. The Ego "first differentiates itself," as it is itself differentiated from the Non-ego, "then re-integrates itself out of this differentiation". What divides itself phenomenally is not, of course, "the pure Ego"; nor is the identity that takes away the division anything but continuity of two presentation-masses in the same totality. "The pure Ego is only the abstract formula for that process by which the Ego-phenomenon completes itself."

Abnormalities in the functions of the Ego are of three kinds: (1) Disturbances in the interaction of the Ego with other presentations, or Suspension of internal perception; (2) Disturbances within the presentation-circles of the Ego, or Abolition of self-consciousness; (3) Development of an abnormal Ego, and persistent suppression of the normal Ego by the abnormal. Insanity is not reached till the abnormality assumes to itself the form of the Ego, and continuity with past life appears broken. However much it may be preceded and accompanied by illusions and hallucinations, these do not constitute it. It is, literally, "alienation," or becoming another person.

The psychological theory of the Ego having been set forth, we are in a position to deal with mind as thinking, feeling, desiring and willing. "Thought" Volkmann defines as "that uniting and dividing of presentations which has its ground solely in the content of the presentations themselves". Thinking presupposes the formation of the concept from the presentation. The origin of the concept, accordingly, is the first point to determine.

The Concept is the presentation or presentation-form set free from everything extraneous that adheres to it. To the presentation adhere its fusions with other presentations; to

the presentation-form its becoming conscious in and along with the particular qualities of the terms between which it is a relation. So far as the presentation is concerned, we know that no fusion, once completed, can be annihilated, but that each particular fusion can be paralysed in its activity by the activity of all the rest. So far as the presentation-form is concerned, the theory of time and space taught us that consciousness of the same form may be involved in the consciousness of quite different presentations, and by the comprehension of these in the same total impression may be to a certain extent isolated. The process of setting free the consciousness of a presentation or a form, *i.e.*, relation (*Verhältniss*), from all extraneous relations (*Beziehungen*) by the reciprocal arrest of extraneous relations is called Abstraction. All concepts arise by abstraction.

Concepts are divided into conceptions of objects, of attributes, and of relations. Conceptions of objects are divided into individual and generic concepts; conceptions of relations, into form-concepts of intuition and of judgment. The preliminary stage of the individual concept is the presentation of the individual object; of the generic concept, the "generic image" (*Gemeinbild*). The object-conception isolates total presentations; the attribute-conception, partial presentations. For the obtaining of form-conceptions, presentations must be fused in series, and must be at the same time distinguishable. The condition of our obtaining them is an emotion, by which we become conscious of the relation of the presentations. The forms of intuition are Time and Space; the forms of judgment, Identity and Dependence with their opposites. Generic images of the former are "empty series"; of the latter there are none but artificially constructed generic images. To the original conceptions arising by abstraction we must attach the "derivative concepts," which are artificially constructed from conceptions of objects and attributes by means of the form-conceptions.

To carry the conception beyond the generic image to the stage of the logical concept—which abstraction by itself is powerless to do—there are three auxiliary means, *viz.*, internal perception, apperception, and "designation of the concept by the word". Internal perception sets the generic image free from reference to the external thing that was perceived, and apperception sets it free from the space-form. Internal perception cannot transform the fluctuating complex of presentations in which arrest and fusion work against each other, that stands for the concept, into a "rounded-off, resting presentation". What it does is to

place the whole complex before the Ego, and thus to give a certain "inwardness" to the presentation-mass, to confer upon it a certain tone. The influence of apperception goes further. When once a number of concepts in a measure fixed have been developed, the more general concepts act apperceptively on the special concepts and analyse their manifoldness into its qualitative moments. A concept that comes under the point of view of a more general concept gets one of its determinations fixed, and whatever fails to get fixed by a point of view sinks back. Apperceptions of this kind give the first point of application for definition, which is, "the place-determination of a given concept in a given system of concepts". Of yet greater importance is the designation of the concept by the word. "Internal perception holds the concept fast and transfers it to the internal world; apperception analyses it and in a measure transforms the spatial manifoldness of its parts into the logical manifoldness of its marks; but the designation by a sound fixes the concept by means of a reflex from the external world and under the unity of this reflex comprehends the internal manifoldness as a unity."

The concept in the logical sense is an ideal to which the conceptions we actually form may approximate but which they can never reach. For the logical concept is a "completed, resting, determinately limited presentation," whereas psychological concepts are "imperfect fusions of the homogeneous, imperfectly isolated from fusions with the heterogeneous". Concepts are specially adapted to become apperceiving presentation-masses. In fact almost all our apperception of perceptions depends on the concepts we have acquired.

In judging we become conscious of the positing or annulling of one presentation by another. The Judgment accordingly pre-supposes (1) a relatively fixed presentation lying at the root of the process, (2) a presentation raised into consciousness by the former and subsequently fusing with it, (3) a checking of the fusion of the two, such as is necessary in order to raise the fusion as such into the object of consciousness. These pre-suppositions give respectively the subject, the predicate and the copula. According as the ground of the positing of the predicate is in the content of the subject or outside of it, the judgment is, for the logician, analytical or synthetical. For the psychologist, the difference between the two kinds of judgment points to the contrast between immediate and mediate reproduction. "Every analytical judgment is the becoming conscious of an apper-



ception, as conversely every apperception of which we become conscious assumes the form of an analytical judgment." The synthetical judgment rests on "accidental fusions". Apperception is here absent. The synthetical judgment rises into the "judgment of dependence" only when to the consciousness of fusion consciousness of its necessity is added.

Suspension of judgment is accompanied by a "tension"; conviction, or the resolution of this tension, by a pleasure. As the concept is fixed in the word, so the judgment is preserved in the sentence. The psychological judgment falls as far short of the logical judgment as the psychological falls short of the logical concept. "Psychologically a prejudice is as much a judgment as knowledge, and knowledge is nothing but the becoming conscious of the necessity of the fusion of two presentations."

The consciousness of necessity in judging arises when we find ourselves dependent in our determinate judgments on something other than the accidental relations of presentations. That on which we find ourselves dependent can only be either (1) the content of the presentations independently of the fact of psychical occurrence, or (2) the mode of happening of the presentations so far as it is withdrawn from our influence. The first condition gives psychological necessity to the analytic, the second to the synthetic judgment. From consciousness of the necessity of the former proceeds the conception of "identity"; from consciousness of the necessity of the latter, the conception of "dependence". Of identity we become conscious in the analytical judgment in so far as we become conscious of the apperception that constructs the judgment. The case of the synthetical judgment is more complicated. Reproductions, for example, appear as dependent on the subject; but this dependence does not give the consciousness of necessity. The dependence from which we get the consciousness of the necessity of the synthetical judgment is the dependence of sensations on something external. Complexes of sensations, *i.e.*, intuitions or perceptions, have only two modes of being given in which they appear thus dependent: (1) the synthesis of partial presentations in the total presentation of the external thing, (2) the succession of sensations in the time-series of changes in the external world. From the first kind of dependence we get the conception of Substance, from the second the conception of Cause. The conceptions of substance and cause belong to the class of artificial concepts

described as educed from given concepts by the application of a form-conception.

The necessity so far considered is merely "subjective". But the characteristic of knowledge in the logical sense is "objective," as distinguished from merely subjective necessity. Without some consideration of "knowledge" in this sense we do not arrive at an explanation of "thought". For "knowledge," defined as that kind of judgment in which subject and predicate are connected with objective necessity, or in which their connexion is determined solely by qualitative relations, is identical with the "thinking judgment" (*denkendes Urtheil*). Knowledge being thus defined, there is evidently no difficulty about the raising of the analytical judgment into knowledge. The analytical judgment gives knowledge when both the presentation-masses that enter into its apperception have developed into pure concepts and interact only as such. Between concepts as such no other relations are possible than those of thought. The completed apperception of one by the other involves the knowledge of their qualitative identity. "Synthetic knowledge," on the other hand, seems at first to involve the contradiction that two presentations with divergent qualities are necessarily connected, "that is to say, that two presentations which are not one are yet to be counted as one". The solution of the difficulty is that in synthetic knowledge either one presentation is only a changed apprehension of the other, or both are only different apprehensions of the same third thing. "In the transformation of the *aliud* into the *idem per aliud* lies the logical justification of synthetic knowledge." Synthetic knowledge is possible only in philosophy (which has to do with "metaphysical" and "æsthetical" synthetic judgments) and in mathematics.

The Syllogism (in a generalised sense) is, psychologically, a mediately affirmed judgment that has bound up with it the consciousness of mediation. The need of syllogising arises from the collision of concepts. No less than the psychological concept and judgment, the psychological syllogism falls short of the logical. The rules of the syllogism, and of logic generally, Volkmann here points out, constitute an art for the regulation of thought, not an account of natural psychological processes as they go on when left to themselves.

The "degree of perfection of thought" consists in the degree of its approach to the ideal fixed by logic. The perfection of the judgment consists in its correctness

(*Richtigkeit*), the determination of which properly falls outside psychology. If, nevertheless, we take up the question of the correctness, rightness or validity of the judgment, we may draw the distinction between "subjective" and "objective" correctness. A judgment is "subjectively correct," when it is in accordance with the whole of our permanent presentation-relations, and not merely with a temporary state of preponderance of particular presentations and their casual relations. It is "objectively correct" when the right presentations are placed in the right relation. That relation is right which makes the judgment into knowledge. The presentation, if a sensation, is right when it is rightly projected or localised; if a reproduction, when it is ordered in accordance with sensation; if a concept, when it is assigned to its right place in a fixed "concept-tissue". This concept-tissue, the place in which determines the objective correctness of the concept, is, in daily life, that which has been fixed by language; in speculation, "the logical schema of science". Different from the rightness or correctness is the "holding for true" (*Fürwahrhalten*) of a judgment. We hold that judgment for true of which the predicate maintains itself unmoved beside its subject, in spite of all attempts at arrest by other presentations that likewise offer themselves as predicates. If no predicate obtains this absolute preference, but one of them retains permanently the relatively highest degree of clearness, we call the judgment that unites this predicate with the subject "probable". A judgment that is held for true though passed before the possession of the right concept or outside the right relation of concepts, is called—in a wide sense of the term—a "prejudice". Prejudices are not necessarily either objectively incorrect or subjectively correct.

Feeling (or Emotion in the general sense) arises when we become conscious of the presentative activity as distinguished from the content of a presentation. We become conscious of the presentative activity through its pressing upon a resistance, which pushes it back upon itself and thereby makes it its own presented content. Feeling is primarily the becoming conscious of the degree of tension of the activity thus resisted. In its contrast to presentation, and as excluding consciousness of a determinate *quale*, feeling it is said to be "subjective"; in its contrast to desire, and as excluding consciousness of a determinate direction towards an external effect, it is said to be "passive."

Since the tension through which feeling arises is the state of a presentative activity either pressed down by its arrest or freeing itself from it, feeling is in respect of its tone either "non-pleasure" or pleasure. Pleasurable presupposes non-pleasurable feeling, and is therefore a secondary phenomenon; but it is at the same time something positive, not a mere negation. The presupposed non-pleasure need not immediately precede the pleasure in time, nor need it have won for itself a distinct consciousness. There are "mixed feelings" in the sense that the different partial presentations of the same total presentation may be accompanied by feelings of opposite emotional tone, but not in the sense that there may be opposite emotional tones in the same presentation. While the particular feeling taken singly is always pure, the total feeling is nearly always mixed.

Besides its "tone," there are to be distinguished in feeling the properties of "intensity," "rhythm" and "content". The strength or intensity of a feeling is the degree of intensity of its tension. The rhythm of feeling arises from the circumstance that neither does the intensity of feelings diminish uniformly nor their tone maintain itself the same. Feelings may be divided, as regards their rhythm, into—(1) those that end with the tone with which they began, (2) those that pass into the opposite tone, (3) those that vibrate during their whole course between the two opposite tones. Total impressions of simultaneous feelings may be divided into—(1) mixed feelings that end as pure feelings, (2) pure feelings that become troubled in their course, (3) mixed feelings that periodically become pure or approximate to purity. Feeling receives its "content" from the presentation whose presentative activity is its "bearer".

The explanation previously given of "the tone of sensation" has its ground in the explanation of emotional tone. For sensation springs from the flowing together of elementary states, while feeling is borne by formed presentations. Now the formed presentations that are the bearers of feeling are present to consciousness. The bearers of the tone of sensation, on the other hand, are for ever withdrawn from separate consciousness. Thus the composition of feeling is more accessible than the composition of the tone of sensation, while it offers an analogy with it.

Of great importance for psychological theory is the "somatic resonance" of feelings. This "reflex sensation," which has its physical basis in the vegetative system while

its effects extend beyond, is in inverse proportion to the instinctive movement that accompanies the feeling.

Particular feelings come to be localised in particular groups of presentations. Sometimes they get wrongly localised. By attention to their determinate character they may be detached from particular groups of presentations and even from presentations in general. Determinate feelings may be "projected" into external things.

There is no interaction of feelings as such. The "interaction of feelings" is a mere appearance, at the root of which lies interaction of the presentations that are the bearers of the feelings. Thus simultaneous feelings arrest one another only when the presentation-circles in which they have their seat arrest one another, and fuse only when the presentation-masses fuse in which they dwell. The reproduction of a feeling is, strictly speaking, always a new production.

Different persons manifest persistently predominant emotional tones of different kinds, depending on a permanent attitude of the Ego to new presentations. According as the Ego habitually feels itself furthered or hindered by these, the person is said to be "light-minded" or "heavy-minded". When the Ego habitually rejects new impressions there is "equanimity". Those natures in which a certain mean state of light or heavy feeling is kept persistently and as with an effort, so that all momentary tones and particular feelings end, as it were, in this permanent "ground-tone," Volkmann calls "affective" (*gemüthlich*). Those, on the other hand, in which the ground-tone of feeling easily gives place to momentary tones and particular feelings he calls "genial".

Some feelings are limited both in their origin and development to one and the same definite circle of presentations, while others, either in their origin or during their course, spread indefinitely from one presentation-circle to another. Feelings, accordingly, may be classified into "fixed" and "vague" feelings. In the case of fixed feelings, the presentations can be definitely assigned from whose interaction the feeling proceeds; in the case of vague feelings they cannot. Among fixed feelings those take the first place in which the complete ground of the feeling is given in the qualitative relations of the presentations of a homogeneous presentation-circle. Fixed feelings of this kind raise the claim to universal validity and necessity in the sense that in them there is not merely a necessary connexion between the occasioning presentations and the feeling, but that from

among the occasioning presentations themselves all casual relations are excluded. From this first class of fixed feelings is to be distinguished a second class in which the ground of the feeling is partly, and a third in which it is wholly, in fusions of presentations as distinguished from their purely qualitative relations. Fixed feelings of the last class approximate to vague feelings; for when mediate reproduction is once excited, the excitation propagates itself in ever-widening circles and at last indefinitely. To the first class of fixed feelings belong the æsthetic and ethical feelings; in artistic and religious feelings the influence of fusions is already to a certain extent active; in most of the "nature-feelings" the transition to vague feeling begins to appear. The vague feelings may be classified according to their degree of differentiation from the "common feeling".

By æsthetic feeling is to be understood "that fixed feeling in which the qualitative relation of a determinate combination of presentations reflects itself in its purity". Æsthetic feeling has for its positive condition clear presentations; for its negative condition the power to close off the circle of these from the presentation-circles of daily life. It is thus "unconditional," while the pleasure in the recognition of a teleological relation, for example, is "conditional". An æsthetic emotion more easily arises in contemplation of the unfamiliar, because this is more easily viewed by itself apart from its relations to anything else. With play æsthetic feeling has this in common, that it begins where the needs of life end.

Art is not always and from the beginning Fine Art; in other words, its aim is not originally to call up æsthetic feeling. The work of art is primarily an individual thing that claims to signify a universal. To the end of giving this significance to its work, art employs three means: first, it isolates its object from the real world; secondly, it abstracts from everything empirically determinate that signifies nothing in relation to the universal it aims at portraying; thirdly, it confers determination by raising beyond what is empirically given those features that have significance for its aim. As art advances, it becomes more and more æsthetic. In so far as it aims at its end by means of æsthetic form, it becomes fine art.

Ethical feeling, viewed as "satisfaction or dissatisfaction in the relations of the images of the will," is a kind of æsthetic feeling, distinguished from others by the peculiarity of its objective basis. The difference of the ethical feeling from

the other æsthetic feelings lies in the immediate relation of the presentations in which it is based to the actual will of the subject. For the will of the subject is in accordance with the ethical judgments that have arrived at recognition, or it is not; and this relation is itself an ethical one and pleases or displeases. According to the nature of the relation is the nature of the pleasure or displeasure. Historically the ethical feeling originates in social relations.

Religious feeling is related to ethical feeling as art-feeling to æsthetic feeling. It originates not in ethical feeling but in a feeling that may be called one of "dependence" on an external power. Afterwards it becomes moralised. In its highest perfection it consists in "the feeling of absolute dependence on a physical and ethical absolute".

Definitions of the various forms of "self-feeling" and sympathy (together with its opposite) are followed by an analysis of the "nature-feeling" briefly referred to above. The kind of nature-feeling Volkmann chiefly has in view is the emotion excited by landscape, which he finds to consist in a harmonious combination of fixed (æsthetic) and vague (organic) feelings.

From Feeling, or Emotion in the general sense (*das Gefühl*), Volkmann distinguishes Emotion in a more special sense (*der Affect*) as being, instead of a resting state of the feelings (*Gemüthsruhe*), a movement of feeling (*Gemüthsbevegung*). Emotions, in this sense, owe their origin to a certain "surprise" of old presentations by new ones; their continuance to the fixing influence of a somatic reaction. They may be divided into "depressing" and "exciting" emotions. In the former (illustrated by Fear) the newly entering presentation presses the whole consciousness below the normal state of equilibrium; in the latter (illustrated by Anger) the new presentation divides the old presentations into two groups, one of which it raises and attracts while it drives the other back. Depressing emotions are always painful; exciting emotions, at a certain stage pleasurable. Depressing emotions destroy apperception and lower self-feeling; exciting emotions intensify apperception and raise self-feeling. An emotion has three periods: (1) entrance of the new presentation and disturbance of equilibrium, (2) culmination of the movement, (3) gradual restoration of equilibrium. It is in the second period that the somatic reaction plays its chief part.

When the degree of clearness of a presentation remains constant while the degree of tension of its presentative



activity increases, there is Desire. Desire is thus a form of consciousness involving at once presentation and feeling. It is the consciousness of a "conation" or "striving" directed to the bringing on or against the persistence of a heightened degree of liveliness, clearness or completeness of presentation. From the mere effort of an arrested presentation to rise, it is distinguished as being accompanied by consciousness. To feeling it is related, as an activity directed towards something beyond is to an activity turned back upon itself.

If we understand by "desire in the narrower sense" the becoming conscious of the effort of the presentative activity to raise its presentation, and by "aversion" the effort against the resisting contrary, then every desire in the wider sense is at once desire and aversion. Desire is simplest when the three moments of which it is composed are assigned to three different presentations. This is the case when the presentation that forms the object of the desire is raised by another fused with it, and hindered in its ascent by an opposite presentation. The first of these moments is the desired presentation; the second is the impulse (*Trieb*) occasioning the desire; while the third is the opposition, the function of which only in the rarest cases falls to a single presentation. "Satisfaction" is that pleasure which ends the desire by transformation of the conation into actual presentative activity. The "impulse" is not to be placed in the expected pleasure of satisfaction. Strictly speaking, the desire does not seek satisfaction as such, but finds it when the tension is resolved.

In desire, as in feeling, may be distinguished "content," "intensity" and "rhythm". The content of the desire is the desired presentation. There are no absolutely vague desires in the sense in which there are "vague feelings". That most easily comes to be desired which attracts attention. The intensity of desire depends on the intensity of the impulse and on the degree of fixation of the opposition. Under the head of "fixation of the opposition" comes the effect of prohibitions, dangers, &c., in intensifying desire. There is rhythm in desire—(1) in so far as between the limits of desire and satisfaction the tones and degrees of feeling change, and (2) in so far as there is alternation between rest and movement in the whole psychical life.

A desire is reproduced when the presentations are reproduced from whose interaction it proceeded. As little can there be direct reproduction of desire as of feeling; but desire is more accessible to reproduction through its objec-

tive nucleus than mere feeling. Dispositions to desires, so far as they are grounded in established relations of presentations—which are acquired especially by habit—are called Inclinations. When they have reached a specially high degree they are called Propensions.

“Feeling is passive, directionless, blind; desire is active and directed to an end that it knows, or at least thinks it knows.” Feeling becomes desire as soon as “fixations” mix themselves with the presentation-circle in which it is based. Thus, for example, “pity becomes benevolence; liking, love; hope, longing”.

The ordinary classification of desires into “lower, sensual” and “higher, intellectual” is based on the contrast between sensation and reproduction, applied now to the desired presentation, now to the impulse. Among “desires of sense” two classes may be definitely distinguished, *viz.*, “the pathological desires of sensation, and the—in the wider sense—æsthetic desires of perception; of which the former are composed in all their moments of strongly toned and therefore localised sensations, as hunger and thirst, while the latter have their seat in less toned, clear sensations and therefore have play in the region of projection, as desires upon perception of moving objects or of regular shapes”.

The form most frequently taken by Impulse is that of a “series”. The complication of the form of impulse proceeds to the interweaving of series, and reaches its highest stage when the desired presentation forms the central point of a tissue. “On centralised interweavings of series rests everything that we are accustomed to call Love.”

Desires are less mutually compatible than presentations; for even heterogeneous desires arrest one another, and every arrest of desires proceeds to obscurity. Simultaneous desires can only continue to co-exist when they coincide in the same desired object. Coincidence can take place in three ways: for either the desires may be directed to different partial presentations of the same total presentation or they may act together in the same particular presentation, and in the latter case they may act either in the same or in opposite directions. “In the conflict which the third case involves, the two desires take up alternately the parts of ‘desire’ and ‘aversion,’ and since every progress in the one direction has for its consequence a heightening of the conation in the opposite direction, the interesting paradox results that simultaneous opposite desires intensify one another.”

In immediate connexion with the theory of the impulse,

Volkman continues his account of Instinct—now defined as “that organic pre-formation in consequence of which a determinate impulse transforms itself in a constant manner into a determinate bodily movement without the intermediation of a clearly-appearing presentation”. The impulse is not in itself a desire, since the direction to a determinate presentation is absent; but it becomes a desire when a more or less clear presentation, by the reproductions it occasions, attracts it to itself. The instinctive impulse is always “obscure,” because it is always composed of organic sensations, but the desire in which it expresses itself is not obscure. In instinct the whole appearance of pursuit of ends is to be set “to the account of the somatic pre-formation”.

Volition is desire that has arrived at the prevision of its satisfaction. This prevision, or judgment as to the attainableness of the desire in a determinate way, is the result of the carrying over of the desire from the end to the means and consequent checking of the original desire. Like desire, volition contains in itself no “causality of its satisfaction,” for many volitions remain unsatisfied; but it knows of such a causality, and on the ground of this knowledge expects its satisfaction.

All Volition includes Thought as part of itself. For thought is necessary in order to “transform the *post hoc* of the time-series into the *propter hoc* of the causal series,” and thereby give the security of attaining what is desired. In relation to the thought involved, three periods may be distinguished in the history of every volition, *viz.*, “reflexion,” “deliberation” and “resolution”. As compared with desire, volition has a specially intimate relation to the Ego, from which it has the appearance of proceeding.

The volition resolved on may remain suspended. The suspended will is called “purpose”; the realised will, “action”. Action, again, may be either “external” or “internal”.

The completed volition, whether it has remained a purpose or has proceeded to action, becomes the object of a judgment, which has the “pathological eudæmonistic” or “æsthetic ethical” character, according as it connects with the volition a feeling of pleasure or displeasure, taking its origin from a material relation of the willed object to the total will of the subject or from a purely formal relation of the particular volition to another volition. Both kinds of judgment are extended from judgments on particular volitions to judgments on whole classes of volitions, and, in

becoming themselves objects of a deeply ramified will, rise to the rank of "practical principles" or "maxims"—of "happiness," or of "morality," as the case may be. Ethical judgments upon volition usually appear later than eudæmonistic judgments, because they pre-suppose a more abstract apprehension of the volition; but they are more rapidly transformed into imperatives.

From the apparent arbitrariness of the resultant volition in cases of conflict among volitions and maxims, arises the problem of Free-will. Volkmann's solution of the problem is that only in appearance does the resultant volition take its origin from "an Ego hovering over the conflicting volitions". Ego and "end-volition" are alike phenomena resulting from the interaction of presentations; and they result from the interaction of the same presentations. There is thus no free-will in the sense of an emancipation of the will from law. Freedom, in the sense in which it can be admitted, consists in determination of the will by a law recognised by the person willing. It is "autonomy"—not "arbitrary choice"—as opposed at once to "heteronomy" and to "anarchy". It is not freedom of the "will," but of the person. The law with which, for the person to be free, the will has to be brought into conformity, is the "practical maxim". Consciousness of freedom is consciousness of the determination of the willing Ego by the knowing Ego.

"Moral" as distinguished from merely "psychological" freedom consists in determination of the will exclusively by ethical as distinguished from eudæmonistic maxims. The sum of a person's ethical maxims is his "practical insight," and this, so far as it appears under the imperative form, may be called Reason. To be morally free, accordingly, is to have the will determined by reason. What reason is to the completed volition, Conscience is to the purpose.

Psychological freedom as a permanent property of the subject in relation to a whole class of volitions is called a "trait of character"; extended over the whole of volition, Character. "That character is moral of which the supreme principle is conscience, or, in other words, the moral character is the realisation of reason in an enduring whole of volition." The opposite of freedom as a permanent property of the subject is Passion. "The essence of passion consists in this, that with respect to a class of volitions the maxim is indeed heard, but the will is decided against the maxim". Passion (*Leidenschaft*) is distinguished from Emotion (*Affect*) as a permanent disposition from a transitory state. Repetition of

the same "emotion" may give origin to a "passion" as the feeling becomes sharpened into desire.

With these discussions of Freedom, Reason, Character and Passion, Volkmann prepares the psychological ground for the theory of legal and moral responsibility which he develops in some concluding pages. This takes us beyond the region of pure psychology, and the exposition may here close. The only remark that need be added is an expression of the writer's sense of the inadequacy of this attempt to give an idea of the value of Volkmann's treatise. When reduced to a bare outline, the book inevitably loses what constitutes its most distinctive feature for the student, namely, the exhaustiveness of its detailed treatment. Some idea may, however, have been given of its systematic completeness of arrangement and of its breadth of general view.

#### IV.—BERKELEY AS A MORAL PHILOSOPHER.

By HUGH W. ORANGE.

IN his polemic against Abstract Ideas and Atheism, Bishop Berkeley presents the curious with a critical problem of a certain historical importance. He claims for the doctrines laid down in *The Principles of Human Knowledge*, that they will "abridge the labour of study, and make human sciences far more clear, compendious, and attainable than they were before" (§ 134). This claim he proceeds at some length to substantiate, in the provinces of Natural Philosophy and Mathematics, deferring the consideration of the benefits which would accrue to Moral Philosophy, by the banishment of Abstract Ideas, for a "more particular disquisition" (§ 144). The promise of a directly ethical disquisition he cannot be said to have redeemed; and the clause which admitted its necessity was, in his second edition of *The Principles*, omitted. It has therefore been left for his commentators to elucidate the "hint," which he declares will suffice (§ 100) to let any one see that "the doctrine of abstraction has not a little contributed towards spoiling the most useful parts of knowledge".

Even without his promise, the method by which he proceeds to divide the sciences shows that Moral Philosophy must logically be included among those which are to be aided and abridged; not to mention an explicit declaration, in his *Common Place Book*, that Truth is of three kinds: Natural, Mathematical, and Moral. We know how, in the light of his discovery, he has handled the first two kinds; as regards the last, in the absence of a particular disquisition, this "hint" and his writings as a whole are all the materials we have for a solution of the question of the relation of Berkeley's ethical theories to his *Principles of Human Knowledge*.

This relation has been described by Prof. Fraser as a 'curious and close analogy,' which he thus interprets in a note to the third dialogue of *Alciphron* (vol. ii. p. 107), summing up the fundamental principles of Berkeley's ethical system as follows:—"That the general well-being of all men, "of all nations, of all ages of the world," is what the infinitely good God intends to be promoted "by the concurring actions of each individual"—that this end is to be accomplished by the observance of universal rules which have a corresponding

tendency—and that faith in divine moral government and man's immortality is necessary to make the rules efficacious'.

An attentive criticism may show, more fully, the connexion of these principles with one another; and establish a still closer and more curious resemblance between Berkeley the moralist and Berkeley the metaphysician.

If we are to understand the historical significance of the scattered materials which his writings offer for the construction of a particular disquisition on ethics, it is very necessary to approach them with an idea of what may be appropriately expected from an ethical writer of his day. In every writer, the stress and the emphasis are only to be caught from the contemporary controversies; and in Berkeley, more than in any other, it is impossible, without a perception of the stress, to make anything but a confused and chaotic medley of discords never resolved and suspensions held continually in suspense. A controversial bishop may say much about the pleasantness of the paths of virtue, and yet not be a hedonist. An eager preacher of the eighteenth century may turn a vigorous appeal upon the rewards offered in a future life; and yet it need not follow that he is to be classed as a mercenarian of the nineteenth century. It is necessary to look to what a man is denying, if we would learn the scope and the accent of what he is asserting; and it is equivalent to a transgression of generic differences, or, as Aristotle would term it, *ἀπαιδευσία*, to deduce a nineteenth-century conclusion from a premiss casually given in English eighteenth-century ethics.

The danger of applying the catchwords of the present to the thought of the past, has never been better illustrated than by the inappropriateness of the title 'Theological Utilitarian' to Berkeley as a moralist. It is in this phrase that Prof. Fraser has summed up the 'fundamental principles' which were quoted above.

There is something, it is true, in Berkeley's works which sounds very like 'the greatest good of the greatest number': let us call it Utilitarian. The bishop has also written much about God; let us qualify him, therefore, as 'Theological'. To a writer so flexible, and so copious in the improvisations which controversy demands, it would be equally easy to justify the application, by this method, of almost any other modern philosophical nickname; and equally profitable. There is one sense, and one sense only, in which the phrase 'Theological Utilitarian' has an intelligible meaning; and in that sense it is not applicable to Bishop Berkeley. It is intelligible, if it is to imply a view of the nature of good



as consisting in pleasure: of the test of good as that which brings most pleasure in the end; of the chief obligation of morality as the pleasure or pain to be meted out for an infinite number of years in a future life, or, as Bentham calls it, the religious sanction. In this sense, it is the 'other-worldliness' of which Coleridge and George Eliot speak; it is the venal morality which bargains for eternal life, at the cost of unreasoned virtue. The Hindoo who threw himself before the car of Juggernaut, that he might realise the *sum-mum bonum* in a paradise of sensualism, was a Theological Utilitarian. Subtler forms of the creed are represented by Lord Tennyson, in his character of St. Simeon Stylites:—

'Who may be made a saint, if I fail here?  
Show me the man hath suffered more than I.  
For did not all the martyrs die one death?  
For either they were stoned, or crucified,  
Or burn'd in fire, or boiled in oil, or sawn  
In twain beneath the ribs; but I die here  
To-day, and whole years long, a life of death. . . .  
Surely the end! What's here? a shape, a shade,  
A flash of light. Is that the angel there  
That holds a crown? Come, blessed brother, come.  
I know thy glittering face. I waited long;  
My brows are ready. What! deny it now?  
Nay, draw, draw, draw nigh. So I clutch it. Christ!  
'Tis gone: 'tis here again; the crown, the crown!'

It is in this sense, only, that the words have an intelligible meaning, and as a form of Egoistic Hedonism. It has been said that every man has his price: assuredly, the Theological Utilitarian's is Heaven. What is good? That which will enable me to avoid the pit, and clutch the crown. The sanction is personal pleasure or pain. Benevolence is, indeed, possible, as a useful bid for the prize, but below the skin it must be hedonistic too; for if I extend it to a willingness to forego the real pleasure which turns the balance, the crown, then the morality is brought to a self-contradiction. That which will take me to Heaven, must always be my definition of good.

This is the familiar and intelligible sense of the phrase which Prof. Fraser has applied to Berkeley; and it is the name for a creed which has certainly been preached, whether or not it has ever been held. If it is to be made to cover Berkeley, careful distinction must be made between him and all others to whom it has been applied. It must be held to indicate an anticipation by Berkeley of many of the criticisms brought to bear upon Bentham and his followers; an acceptance of a definition of good, as 'that which tends

to the greatest amount of happiness, for the greatest number of men, and the addition of a sanction, probably inconsistent, to overcome the difficulty of converting Hedonism into desire for others' good; this sanction being conveyed in a theological threat. Instead of being purely dogmatic, it submits the nature of good to arbitration and analysis, but reserves the sanction for revelation. In the one case, 'good' is the condition of entrance into heavenly bliss. In the second case, we are instructed to study the welfare of men in general, in order that we may know our duty: if we ask what claim this duty has on us, argument gives way to dogma; reason is ratified by the theology of threats.

It is, probably, in this latter sense, that the phrase Theological Utilitarian has been used by Prof. Fraser. Some support for such a reading of Berkeley's works may, no doubt, be discovered in the manifold varieties of his utterances; it may, or may not, be a complete account and synthesis of them. But, in that case, what becomes of the 'close and curious analogy' which is said to exist, between his ethical system and his system of human knowledge? How is there a parallel between the grounds of reality and of obligation? or a similarity in the relations of God and the world? What point, what aspect, is there in such a moral creed, which reminds us of anything peculiar to Berkeley in his conception of the material world? How is the God visually apparent in 'this mundane system,' analogous to the Judge who holds aloof from a natural morality, until the dread moment for enforcing it? According to Berkeley's metaphysical writings, God is so far the most clear and primary reality, that we only know ourselves by our knowledge of Him. In this reading of his ethical system, the reality of good depends upon the pleasure-sensations of men; and we can go all the way, without God, in the discovery of the nature of good, by the process which the word Utilitarian suggests. God is only necessary as the original willer that the formulæ of universalistic hedonism should be correct, and the ultimate avenger of their validity. If there be any analogy in these two conceptions of God and of the world, it is rather curious than close.

The clue to a different interpretation of this analogy is found in that part of *Alciphron* in which the moral doctrines of Shaftesbury are criticised. According to Green, in morals Berkeley 'ought to have regarded Shaftesbury as his yoke-fellow'; and indeed, if Berkeley's system were based on nothing but the fleeting ideas of the pleasure and pain of individuals, then his antagonism to Shaftesbury's recognition

of principles of beauty and proportion among these ideas, would be hard to understand. And yet there is no part of *Alciphron*, in which the spirit of opposition runs higher, than in the criticisms, personal and literary, which are levelled against the "crazy nobleman," Cratylus, and his reduction of virtue to a relish, or a certain *je ne sais quoi* of appreciative contemplation. The antagonism is not more determined, even when the theory of abstraction, or of the existence of matter, is the subject of dispute.

If we carefully inspect the arguments which Berkeley brings to bear upon the doctrine that 'virtue is beauty,' we may discover the line which his particular disquisition would have taken, upon the leading moral controversies of the day.

One of the foremost issues was the debate, as to the faculty which apprehends moral truth. Even at the present day, we occasionally come across lingering traces of the belief, that to explain the origin of a sentiment is to deny its validity: and at the time when Locke's dictum was universally accepted, that truth consists in the perception of the agreement or disagreement between ideas, it was natural, that those to whom the universal certainty of moral truth seemed vitally important, should endeavour to argue down the dangerous supposition, that we apprehend moral truth by any other faculty than that by which we see that two and two make four. It seemed that, unless the claim of virtue could be put as high as the claim of the multiplication-table, universal obligation must give way to individual caprice; and in no other way could scepticism more grieve the enthusiasm of the orthodox, than by urging the claims of the faculty which feels to influence the man who is about to act. An eternal and immutable morality rests upon an intellectual system of the universe; and though, in later days, a skilful handling of the other subject of dispute, the relation of God to morality, could reconstruct a binding and yet intelligible ethics, upon a partly sentient faculty of conscience, yet in Berkeley's day the time had not come for these damaging admissions to 'the enemy'. Moral views prevailed, as to the moral faculty. So when Hume mischievously remarks, that 'belief is rather a state of the sentient, than of the cogitative part of man,' he is aiming the deadliest of all blows at the truth of the matter of such belief. And when he says, as he does distinctly say, that it is a moral sense, and not the faculty of reason, which distinguishes right and wrong, he is speaking in direct allusion to a critical ethical topic of his day.

Hume's denials are a guide to Berkeley's assertions. By

what faculty is moral truth apprehended? Very distinctly Euphranor implies, that the "notion" is "an object of the discursive faculty". And if moral truth is also moral beauty, the very fact of its being beautiful, proves, all the more, that, as beauty, it is an object of the understanding. That is the line of the argument which, at first sight, seems disposed to take the turn of denying Shaftesbury's position, that virtue is beauty. Berkeley does not deny it: he accepts, and asserts it. Virtue is beautiful, and is, therefore, not the object of a moral sense, but apprehended by the discursive faculty. Virtue is beauty, and must, therefore, rest, as beauty does, upon a mind. "We do not see beauty, strictly speaking," says Euphranor; "we infer it." "We see it by reason, through the means of sight; consequently, beauty, in this sense, is an object, not of the eye, but of the mind" (*Alciphron*, iii., § 8). The long digression upon architecture, which follows, is summed up to precisely the same effect. "I should now, methinks, be glad to see a little more distinctly the use and tendency of this digression upon architecture." "Was not beauty the very thing we inquired after?" "It was." The necessity of some real principle of beauty is then demonstrated; beauty implies an end; an end, "forasmuch as without thought there can be no end or design," implies a mind, which rules over the universe and the moral actions of men. Thus the outward show and appearance of virtue is made to yield by analysis a metaphysical proof of the "spirit which governs and actuates this mundane system"; and it is with the moral world, exactly as it is with the material, that its *esse* is *percipi*. The parallel is complete, as to the faculty called into play. We have here a "new theory" of ethical vision. The eye does not "see"; it furnishes to the mind, materials for seeing, "the canopy of heaven, and the choir and furniture of earth"; so, in the moral world, "the comparing parts one with another, the considering them as belonging to one whole, and referring this whole to its use, or end, should seem the work of reason: should it not?"

The analogy between Berkeley's ethical system, and his *Principles of Human Knowledge*, is this:—The material world consists only of ideas; the *esse* of matter is *percipi*; the only true substance, spirit. But, inasmuch as we find, that the ideas of different spirits vary, that ideas are void of force, and that each spirit has not control over its own ideas; since, in short, these ideas demand a metaphysical ground of unity, source of energy, and basis of reality—we infer God, as the universal spirit percipient of consistent truth, the permanent reality, and the source of energy. All that is not

spirit, is idea; and the difference between true and false ideas, between life and illusion, is, that the true ideas are also God's ideas, and He is the one Spirit who sustains, consistently, and for ever, the many ideas which come and go in the minds of men. To know the truth, is to have the same ideas as God. "Laws of nature" are observations, for practical purposes correct, of the order in which he is pleased to manifest this succession of ideas.

So, in the moral world, we have "laws of nature," which are approximately demonstrated; we can learn them by certain signs, and recognise the voice of God in the orderly proportion of moral phenomena (*Passive Obedience*, § 8). To do the good, is to have the same ideas as God. This world only shows a multiplicity of moral perceptions, pleasures and pains, which cannot explain themselves; the human spirits who perceive them, perceive also the limits of their power over them, and require some independent ground of their validity; they perceive their own differences of moral ideas, and require some criterion of good and bad; they find it in the Spirit who holds all truth and reality together. Of moral, as of other ideas, some are permanent; some are individual fancies and aberrations. Good is true, and real, and life: evil is false, and illusory, and death.

"A spirit is one simple, active, undivided being: as it produces ideas it is called the will; as it thinks, or otherwise operates upon them, it is called the understanding." In each of these aspects, God is related to the human spirit. Good is predicated of will; truth is predicated of the understanding. Ideas are true, or good, when the human spirit is at one with the divine.

By such an analogy Berkeley might well have claimed for his "particular disquisition," that all the complications of human conduct are solved by the same metaphysical *Deus ex machina* who had solved all the problems of knowledge. First, the question, as to the faculty which apprehends right and wrong, is set at rest: moral laws are laws of nature; but there is no value or force in them as laws, save in so far as they are the orderly expression of God's ideas. Both in natural, and in moral philosophy, these generalisations are to be attained by means of the use of reason. In the *Discourse on Passive Obedience*, a single moral "law of Nature," "Thou shalt not resist the supreme power," is submitted, as an instance, to this process; and is identified by means of the marks which are proper to such a law—importance, universality, niceness, or difficulty. To reason and to argumentation are left—first, the very being of laws of nature; secondly, the criterion, whereby to know them; and, thirdly, the

agreement of any particular precept with that criterion (§ 29). And so far are these laws from being the *a posteriori* conclusions of Utilitarian calculation, that "these propositions are called *laws of nature*, because they are universal, and do not derive their obligation from any civil sanction, but immediately from the Author of nature Himself. They are said to be *stamped on the mind*, to be *engraved on the tables of the heart*, because they are well known to mankind, and suggested and inculcated by conscience. Lastly, they are termed *eternal rules of reason*, because they necessarily result from the nature of things, and may be demonstrated by the infallible deductions of reason" (§ 12).

But there was another question at issue for a moral philosopher of Berkeley's day; and the manner in which he gathers up his solution of this ethical question, in his own peculiar metaphysical theory, would have been one of not the least attractive parts of the "particular disquisition". Ever since the day of Descartes, and, possibly, long before, the relation of God to morality had been a difficulty for the dogmatic. Could God, if He had chosen, have appointed a different moral order? Is good in its nature independent, or is it merely good because God wills it? Descartes had said, that if He so chose, God could will that good should be evil, and evil good. The anxiety of the thinkers of those days, not to place anything on a footing of independence towards God, often becomes even grotesque; as in the case of the argument as to the nature of space—that it could not be infinite, or else there would be two infinite beings, and space would be a rival to God's omnipotence. But, still, the view, that morality was not absolute, but, so to speak, a divine derivative—the bare possibility that God might revoke the delegated validity of virtue—was to many moralists the more disagreeable alternative; and amongst those who endeavoured to explain, that without any limit to God's omnipotence, it was, at the same time, impossible for Him to put bitter for sweet and sweet for bitter, to call good evil and evil good—was Cudworth, author of the *Eternal and Immutable Morality*. In this book, posthumously published just when *Alciphron* was ready for the press, the nature of fate is discussed with great erudition, and the relation of God to morality settled by means of a subtle distinction between God's reason and God's wisdom.

Now it is obvious that the difficulty here again arises from a supposed dualism of good objective and good subjective; and it is easy to guess how Berkeley would have handled any such distinction. When he "hints," that the doctrine of ab-

straction has contributed not a little towards "spoiling the more useful parts of knowledge" (*Principles*, § 100), we are but dull learners, and suffer in vain from his reiteration, if we do not understand, that to Berkeley "abstract ideas" mean a reference to some objective reality "apart from the mind," and that with such dualisms he has a short way. He defines existence as perception, and the distinction of internal and external disappears. There can be no good independent of a mind, and, therefore, no rival to God's omnipotence. As for the supposition that God might have willed good to be something different from what it is, such an hypothesis merely amounts to the absurdity of imagining, or trying to imagine, a negation of the law of identity. Good is that which is present in the mind of God; it is impossible to imagine that evil, or that which is absent from His mind, should be present in it as well; and in *Siris* (§ 320), he thus plainly states this corollary, 'Evil, defect, negation, is not the object of God's creative power'.

We have seen that, in *The Principles*, Berkeley makes the distinct statement, that his metaphysical theories will have a direct bearing upon moral philosophy; that such a connexion is strictly in keeping with other passages in which he speaks of the nature of moral truth; that he foreshadows a particular disquisition upon the subject, but, meanwhile, leaves his readers with a "hint" which he hopes will suffice to let any one see, that the abolition of abstract ideas will mean a reform in ethics. We have seen that Prof. Fraser has drawn attention to a 'curious analogy,' existing between Berkeley's ethical and metaphysical theories, although, in the short summary in which he has intended to express the analogy, he has rather obscured it by the use of a phrase which either denies, or else inconsistently asserts, a connexion between ethics and metaphysics. We have recognised that in moral, as in natural philosophy, Berkeley must intend his abolition of abstract ideas as the prelude to an idealism in which God is both the ultimate and the immediate reality; a system of which it is the "main drift and design" "to inspire his readers with a pious sense of the presence of God" (*Princ.* § 156). We have seen, furthermore, that this hint of a connexion between ethics and metaphysics, as an alliance to the great advantage of the former, is not a mere idle boast on the part of Berkeley; but that, in the *Discourse on Passive Obedience*, he addresses himself to a demonstration, in a single instance, of the identity between a moral law and a law of nature. We have amplified this demonstration by once more stating the peculiar meaning attached, in his system, to the words "law of nature"; and



we have been warranted in so doing by the result which is given by a close and exact attention to the criticism, in *Alciphron*, of the saying of Shaftesbury, that virtue is beauty.

Those parts of Berkeley's writings, from which the present argument is mainly supported, are justly said by Prof. Fraser to be the most important statements of Berkeley's moral philosophy. But of the many services which this commentator has rendered to the readers of his author, not the least valuable is his observation of the development and progress of Berkeley's idealist principles. And it is, similarly, not the least curious part of the close analogy that exists between Berkeley's ethical and his metaphysical principles, that precisely the same advance which is found in his conception of nature may be traced, also, in his conception of morality.

The 93rd section of the *Discourse on Passive Obedience*, which was only added in the third edition, might be quoted in illustration of this development in reference either to ethics or to mathematics :—

"In morality the eternal rules of action have the same immutable universal truth with propositions in geometry. Neither of them depends on circumstances or accidents, being at all times and in all places, without limitation or exception, true. 'Thou shalt not resist the supreme power' is no less constant or unalterable a rule, for modelling the behaviour of a subject towards the Government, than 'Multiply the height by half the base' is for measuring a triangle. And, as it would not be thought to detract from the universality of this mathematical rule, that it did not exactly measure a field which was not an exact triangle, so ought it not to be thought an argument against the universality of the rule prescribing passive obedience that it does not reach a man's practice in all cases where a Government is unhinged or the supreme power disputed."

The mystic pantheism of *Siris*, is the most remarkable instance of the development of Berkeley's principles, from a staring dualism of Spirit and Idea, into a conception of God which incorporates "ideas," in the Platonic sense, in a logical chain of graduated universality, with the *anima mundi*, the expression of them all; and ascends from tarwater, acid, salt, and sulphur, "by a regular connexion and climax, through all these mediums, to a glimpse of the first mover, invisible, incorporeal, unextended source of life and being". So of ethical study Berkeley dedicates, in the *Siris*, the later growth as well as the first fruits; and we advance, from the earlier conception of law, as a synthesis of the succession of ideas in a personal God, a spirit limited, because distinct from ourselves, into a mystical identification of God with law and order (§ 334) and the elevation of the principle of order, or *λογος*, into membership of the Trinity (§ 361).

## V.—MÜNSTERBERG ON 'MUSCULAR SENSE' AND 'TIME-SENSE'.

By the EDITOR.

THE first of the four researches occupying pt. ii. of Dr. Münsterberg's *Beiträge zur Experimentellen Psychologie* (see MIND No. 58, p. 234) is a very good and characteristic specimen of his workmanship. It is concerned with that question of 'Time-Sense'—meaning the comparative measurement of short time-intervals—which has been one of the most constant subjects of psychophysical inquiry for the last five-and-twenty years, but which, owing to the bewildering variety of the results obtained, cannot thus far be reckoned among the triumphs of the experimental method. Münsterberg carefully reviews all the work that has previously been done upon the subject, from Mach, Höring and Vierordt on to the younger investigators in Wundt's laboratory; embarks next upon a far more searching introspective analysis than had yet been attempted of the conditions and means of time-measurement; and, after gaining thereby some light upon the discrepant and even opposed figures of the other experimental inquirers, brings his own subjective results more or less decisively to the test of positive experiment.

The inquiry bears directly on the general thesis of the *Beiträge*—that all so-called activity of consciousness must admit of resolution into "change of conscious content" if the psychophysical method is to be taken seriously and consistently carried through. It is common to the later time-researches (which have proceeded chiefly from the Leipzig laboratory) to find, with whatever difference of numerical values, a periodicity in the power of more or less accurately estimating the comparative lengths of experimental time-intervals. The only supposition so far advanced to meet the facts has been to credit consciousness with a faculty of directly apprehending such (short) intervals. This faculty has been called 'Time-sense,' after Czermak, who in 1858, without himself experimenting, gave the first suggestion of specific inquiry to be made on the subject. It is distinguished by Wundt (*Phys. Psych.*, 3te Aufl., ii. 354) from our common estimation of the lapse of time—allowed, so irregular as it is, to be dependent on the varying flow of representation. Now one result of Münsterberg's inquiry is to break down the distinction which it has thus been sought to make between our rough natural judgment of the length of considerable time-intervals and that delicate appreciation of minute differences which takes place under experimental conditions. In the one case, as in the other, he finds a "content"

present; and all depends, in either case, upon what the nature of the content is. Speaking generally, the "content" proves, directly or remotely, to be of that kind which goes most commonly by the name of 'Muscular Sense' (because in some way connected with the physiological process of muscle-innervation). The present occasion requires, therefore, some definition of Münsterberg's position in regard to 'Muscular Sense'; and it is the more necessary that this should not be deferred, because it is one of the most characteristic features of his whole line of inquiry that he shows the muscular factor to be everywhere implicated in the psychophysical theory of mental life. It figures with decisive effect in all the researches he has yet published; being even employed in the latest memoir (filling pt. iii. of the *Beiträge*) to account for the intensive character of sensation generally, and thus giving ground for a daring attempt to refound from the bottom the whole theory of the quantitative relation between sensation and stimulus, to which (since Fechner's time) the name of 'Psychophysic' has mainly been limited. Upon that attempt, with its underlying theory of intensity, all judgment is reserved; but any remarks now made to clear the way for understanding of the results, as striking as they are novel, obtained in regard to 'Time-sense' may yet be taken as having also other application, of which more anon.

Münsterberg's doctrine of 'Muscular Sense'—to call this here by its least question-begging appellation—is worked out at length in his prior essay, *Die Willenshandlung* (see MIND xiii. 436), and is only summarily repeated in the course of the *Beiträge*. While not put forward as mediating between the opposed theories that have thus far occupied the ground, it yet may be regarded as helping in that way, and the more deserves consideration on this account. Apparently, he puts himself on the side of those who, of late years, with gathering strength, have contended that all the sense-experience in the case is peripherally determined—that muscle has first to be got into the state of actual contraction and afferent nerve-fibres in muscle itself or related parts (ligament, joint, overlying skin or what not) have to be thereby stimulated at their peripheral ends, with consequent cerebral excitation, before anything that can be called 'sense' arises. In other words, the supposition (as by Bain or Wundt), of a specific subjective experience directly attending the original cerebral outflow of nerve-impulse towards muscle must be rejected. Yet, in fact, nobody could be more decided on the point that, with all muscular action which we are consciously aware of performing, there is other subjective accompaniment than follows upon actual contraction at the periphery. There is always, in such case, a prior state of consciousness involved, a real (subjective) antecedent to the innervation of the muscle or muscles concerned. In other words, Wundt's 'innervation-feeling' (or Bain's 'feeling of mus-

cular exercise,' 'feeling of energy put forth') stands for an indubitable fact of experience. True, it is nothing that can properly be called 'sense,' being in point of fact, a mere memorial representation (*Erinnerungsbild*) of foregone muscular action now again to be put forth. But, besides being thus inevitable antecedent of the coming contraction, so much and so regularly is it also constant accompaniment throughout the whole course of the muscular act that in pathological circumstances, where this or that element of present sensation (peripherally determined) may have dropt out, it can supply in representative form all that is wanting to the effective conscious account.

If this may be taken as a fair indication of the position taken up by Münsterberg on the question of 'Muscular Sense,' I desire, without now considering how far it may have been before approached by others from the same side, to call attention first to the significance of the concessions it involves. It is allowed that in the muscular (or, as it is commonly called, motor) attitude we are quite otherwise conscious than in any state of mere sensible affection. Whatever elements of (passive) sensation, peripherally determined as in the case of all other passive affection, may be shown to be present in the conscious account when muscle is contracted, there is also never absent another element of experience peculiar to this case and to this case alone. In none of the special senses or the modes of general sensibility does the conscious experience that arises through stimulation of afferent nerve-fibres have as antecedent other conscious experience, which, whether representative or not, means a cerebral excitation already under weigh before the brain is again excited by ingoing stimulus from the periphery. Now Bain at least, with his 'Muscular Sense' proper, has always been concerned to establish nothing so much as just this peculiarity of *attitude* in the system (whether physically or psychically understood) when muscular action is in process; and, for the rest, both he and in his own way Wundt have never overlooked the elements of (passive) sensation inevitably bound up, by constitution of the system, with the process of muscle-innervation. To me, indeed, it has long seemed that, whether regard be had to the elements of 'common sensation' necessarily excited under muscular contraction or to the procurement and variation of special sensations (sight, touch, &c.) effected by exercise of particular muscles (of eye, hand, &c.), the truest description of so-called 'Muscular Sense,' for psychological purposes, will represent it as never other than a co-efficient with this or that kind of passive sense to a resultant in experience that is most aptly termed 'active sense'. Though it may, by experimental artifice, be more or less separated out from the accompaniment of special sensation by which it is normally attended; and though it may even, with greater difficulty, be made to throw off this or that element of common sensation ('organic sensibility') naturally implicated with it; yet

in perfect purity, *i.e.*, without *any* concomitant of (passive) sensation—meaning sensation peripherally stimulated—I do not see how it can ever in actual experience be found. This, however, should not remain doubtful, that there is in it, as a kind of conscious experience, something other than and prior to any such sensation.

As to whether this prior element has an altogether representative character or may be claimed as, at least to some extent, presentative—which is a way of expressing what both Bain and Wundt assert by their use of the name 'feeling,' or also 'sensation,' for it—the point is one of great interest, though its determination one way or the other would not affect the main psychological issue. That there must be representation involved, is not to be doubted. The fact that the process of muscular innervation, in the case supposed, sets out from a cortical seat, however constituted or wherever situated this may be, implies that it must be affected by all that has previously gone on in or through that cortical area; and this, in subjective language, means 'representation'. Why, even in the case of peripherally stimulated sensation, where of course the stimulus has first to reach the brain-centre before the sensation comes to pass as conscious experience, it cannot be supposed that this, though denominated 'sensation,' is so altogether presentative in character that it is not, then and there, modified in quality or otherwise by previous excitation of the same centre—in other words, is not overlaid by 'representation'. Let it then be frankly allowed that any particular muscular innervation proceeding from the brain-cortex must have its specific subjective phase—I mean that distinctively prior or initial one now under consideration—inevitably modified by the previous history of the 'centre' concerned. And all those who (like Münsterberg) have learned to regard the physiological distinction of 'motor' and 'sensory' centres as more or less artificial, may well hesitate to say what amount of representation may not be involved in the energising of whatever widespread or deep-going cerebral plexus a particular muscular innervation takes its more immediate start from. But just as there never has been any hesitation in connecting some mode of presentative consciousness, under name of 'sensation,' with cortical excitation determined from the periphery—without reference to the representation necessarily co-involved, and apart from any question of the farther course towards the efferent (so-called 'motor') side of the system which an incoming (so-called 'sensory') stimulus always *tends* to pursue; so, when from within (*i.e.*, apart from direct 'sensory' stimulus) a process is started which results in muscular innervation at the periphery, it seems analogically justifiable to posit an element of presentative consciousness in the case—over and above anything in the way of representation not denied to be necessarily implicated. The difference on the afferent side of the system between sensation and representative image is allowed to

be one that depends only, or at least mainly, upon degree of excitation; this being (normally) greater when determined from the periphery. How then should there not be a corresponding difference of representative and presentative experience on the efferent side when the cerebral process in one case is not, and in the other is, effective in producing overt muscular contraction? The force of the analogy, such as it is, can be turned aside only by the kind of assumption which, for example, Bastian has made, when he declares the organ of mind to be "that portion only of the nervous system which has to do with the reception, the transmission, and with the vastly multiplied co-ordination of 'ingoing currents' in all kinds of nerve-centres" (cp. *MIND* vi. 128). But with an organic whole like the nervous system, nothing could well be more perilous than such division.

The reference just made to Dr. Bastian, who among English inquirers led the way and has maintained the lead as advocate of what may be called the passive-sense theory of 'Muscular Sense,' suggests another. A point that remains to be noted in Münsterberg's treatment (or expression) is common to him with his English predecessor. Some ten years ago, in a review of *The Brain as an Organ of Mind*, it was observed here (vi. 127) that to speak, with Bastian, of 'Muscular Sense' as 'Sense of Movement' ('Kinaesthesia') did not mark a step forward in psychological discernment. Bastian, to be sure, was not singular in adopting that mode of expression, for it had been used by Bain and others before as a convenient synonym. It has also since that time been pretty freely employed, apparently without heed to any difference of implication. Thus, Münsterberg, who generally uses the name *Spannungsempfindung* or 'sensation of strain' (cp. Bain's 'dead strain') for the whole aggregate of conscious experience, representative and presentative, attending the muscular act, does not hesitate to give often as simple alternative *Bewegungsempfindung* or 'sensation of movement'. A little reflexion, I venture still to think, should suffice to rule it out as either alternative or substitute. 'Movement,' as such, is, no doubt, a notion of prime importance in psychological explanation, and much that appears simple to ordinary consciousness finds expression in terms of more or less complex motor representation; but, however potent an instrument of psychological reduction, movement cannot be held a simple datum of conscious experience except with those to whom space and time appear to be such data. Granted an original intuition of space and time, and there need then be no difficulty in assuming a sense—or, rather, intuition—of movement, importing with it the relative apprehensions of time and space within which movement has to proceed. But, if it is recognised that one of the psychologist's first and chief tasks is to give genetic account of our space- and time-apprehension (let the data employed for this be what they may), how can 'movement' help following suit? To Münsterberg

at least, it is not doubtful that space-perception is a synthesis of touch, sight, &c., with 'muscle-sensation' (as sometimes, *e.g.*, pt. ii. 25, he does not fail to call it). I would urge then, not that 'muscle-sensation' be never called anything else, but that those who rely upon it as indispensable (original) factor in the psychological account of space-apprehension should never call it by the name of 'sensation of movement'. They cannot do so without laying themselves open to the charge of having already virtually assumed space (and time) as simple original intuitions and thus of solemnly playing out the farce of *ὑστερον πρότερον*. 'Movement' in short, from the psychogenetic point of view, is a complex perception, as ill-fitted as possible to be the designation (subjectively meant) of an original sense-experience. It is not 'movement' that we are originally conscious of in the case of muscle-contraction—were it only because, in point of fact, movement is by no means always the result of getting into the muscular attitude. Moreover, when movement does result, it is movement of limb, head, &c., that in fact takes place and that we are conscious of,—not movement of muscle (as in a loose way, with more or less of physiological reflexion, we come to say). Now, surely, movement of limb or the like is, subjectively regarded, most complex perception. Thus, on every ground, 'movement' is to be deprecated as subjective designation of the simple sense-experience. For this we must rather fall back upon and adhere to such words as 'tension,' 'strain' or 'effort,' which—though they too (like most others, if not all, psychological terms) are not without an objective meaning and application—can consistently be used with an import at once subjective and simple. To 'muscle-sensation,' on the other hand, no exception can be taken, provided it is meant for no more than mere external designation as when we speak of 'eye-sensation,' 'skin-sensation,' or the like.

Turning now to the special question of 'Time-sense', it is impossible for anyone to read such an account as Wundt gives (*Phys. Psych.* ii. 348-59) of the experimental results hitherto obtained and not to be struck most of all by their extreme discrepancy. The time certainly had come for asking what it might be that was rendering so futile all that expenditure of scientific skill and patience. Prof. Cattell, when giving in *MIND*, a year or two ago, some general account of the psychological work that had been done in the Leipzig laboratory, made in regard to the time-experiments a suggestion as to unavoidable error in the method adopted; but this applied rather to the discrepant results obtained by one and the same inquirer than to the more signal differences separating every inquirer from all the rest. The fault, evidently, must lie deeper; not to say that the various experimenters have themselves, in general, shown no want of ability or readiness to note and allow for shortcomings in mere method. Experiment, where applicable, is a very powerful instrument, but, if it



is to perform its decisive work, there must first have been a close intellectual analysis of circumstances and general conditions, and the end to which it is to be directed must be well and clearly conceived. In the present case, it is mostly at the prior stage of pure psychological consideration that the fault has lain; or, rather, it is want of prior psychological analysis that has rendered so abortive all that experimental labour.

Here in paraphrase, with some expansion, is Münsterberg's final summary (p. 13) of the outcome of his predecessors' work. The 'constant error,' which most of the inquirers have noted in our comparison of small times, is according to one the result of accidental circumstances, but according to others takes the form of regular over- or under-estimation: one maintaining that times under 3 sec. are magnified and above 3 sec. are shortened; another putting the dividing point at .75 sec.; and a third declaring that not only the times under .75 sec. but also the comparatively larger times over 5 sec. are magnified. When there is under-estimation, this, according to one, attains a minimum, *i.e.* departs least from the true value, at all multiples of .7 sec. (or thereby); according to another, only at all odd multiples of this figure (2.1, 3.5 sec.), the even multiples on the other hand yielding maximum-values<sup>1</sup>; while, according to a third, the reckoning is least inexact at multiples of 1.25 sec. As for Weber's law, it either, according to one, has no application to 'Time-sense'; or has absolute application, according to another; or, according to a third, holds for the smaller but not for greater intervals; or finally, according to a fourth, holds for the greater but not for the smaller. In this summary record, no account is taken of Mr. L. T. Stevens, who in *MIND* xi. 393 got, as main result of a very protracted series of experiments, a complete reversal of that sign-value of the 'constant error' upon which, amid all their other differences, the German experimenters have agreed more or less; Stevens finding the smaller times (under .53 sec.) to be under-estimated, and the larger (over .87 sec.) to be constantly over-estimated! Bad as things are with the 'Time-sense,' they are not quite so bad as this direct contradiction would make them appear. Stevens's method of experiment, as Münsterberg points out, is too disparate from that of all the others to afford any grounds for comparison of results.

Taking, then, the German results, in all their variety, by themselves, Münsterberg proceeds to ask whether it can be otherwise than that the different inquirers have unawares brought quite different measures to the estimation of those small times; and this suggests the central question of all, what it really is that they have set out to measure in the case. A small time-interval being

<sup>1</sup> In his summary statement (pp. 13, 14), Münsterberg has here, by oversight, put "maximum" for "minimum" and "minimum" for "maximum".

marked off by two limiting sounds, the problem, in general, has been for the experimenter—starting at once from the second sound, or waiting till after a pause (commonly taken of the same length as the given time) and then starting from a third sound—to indicate by some kind of action when he judges that an equal time has elapsed as between the first two sounds. The particular means by which this is effected for such very short intervals as can with some approach to accuracy be thus determined are detailed at length by Wundt (*Phys. Psych.* ii.), who has done more than any other to devise them; they are also sufficiently explained by Münsterberg, who, while vindicating them from some objections that have been charged, is able also to improve upon them for his own use. Without attempting any description of them here, the point to be noted is, that the 'comparison-time' sought has to be subjectively determined, being sensibly limited only at the beginning, whereas the given or 'normal' time is objectively (sensibly) determined at both ends. Now the assumption hitherto has been that the two limiting sounds form the whole sense-content of the 'normal time,' and that the apprehension of time-interval between them must be set down as a direct act of consciousness, which can be repeated with more or less exactness under the different conditions of the 'comparison-time'. The directness or simplicity of the conscious function in both cases has procured it the name of 'Time-sense,' but, in reality, all that is strictly sensible in either case are the limiting sounds. It is here that Münsterberg takes issue.

Careful introspective scrutiny of his own time-estimates under the experimental conditions discloses for him a whole class of factors overlooked, or hardly regarded, by previous inquirers. These are sensations (or representations) of muscular tension, and when looked at closely enough are found to be of the most varied kind. As to this presently; but first a word on the question of principle. How without some definite means should there be estimation of time at all between two sound-sensations? Two pairs of similar sounds, separated now by one now by another interval of time, are to consciousness the same fact of sense-experience except in so far as something else is present to differentiate the pairs in respect of time-interval. Let this something be (as it may be) called act of attention, since without special attention to the time-intervals as such the experience in each of the cases supposed would simply be of the sounds as two. But then the attending, which makes or marks the difference of time-interval, must consist of something—something different in the two cases; and what may this be but certain feelings of muscular strain (actual or represented), if the feelings are evidently there and the closest observation can detect nothing else? Sense of muscular strain, though by itself, of course, it is not consciousness of time, may yet be so much the main factor in such consciousness as to mark (in its variations) the difference

between this time-interval and that. Without arguing the matter at length, Münsterberg here takes up the position that as space-apprehension can be shown to arise through fusion or synthesis of elements of sensation (chiefly touch and sight) with felt muscular activity, so also time-apprehension is explicable as another synthesis of feelings of muscular tension with sense-elements (by preference sounds). No doubt, the question even as regards space remains under debate; but at least from those who under Wundt's lead have done most of the experimental work on 'Time-sense' no objection in principle can come to the extension of such psychogenetic consideration to time. All depends however, for the one or the other problem, upon the precise nature of the muscular experience to which the (passive) sensations, so differently present in space- and in time-perception, give occasion. Hence, for the more special question of the means of comparative time-measurement now in hand, the need of making up the account with all that particularity that distinguishes Münsterberg's novel introspective effort.

His experience is in many ways far from uniform, but, except with very short intervals (put for himself under  $\frac{1}{3}$  sec.) where nothing can be noted, the central fact is for him always a felt process of varying muscular strain. The experiment, let it be remembered, consists in the attentive hearing of a first sound, with a second expected presently; upon the hearing of which—in the simpler case where no pause intervenes (to be closed by a third sound)—the subjective estimate of 'comparison-time' has to go forward without other condition supplied. There is actual strain in the hearing of the first sound; and this being taken, in the circumstances, as signal of another sound to follow, there is next representation of strain in expectancy of the second sound, with actual strain again when this comes to be heard; whereupon representation must do all the rest. Now what Münsterberg finds is, that the varying strain, actual or represented, fills up and is all there is to fill up his consciousness in connexion with the limiting sounds. The sounds themselves have no appreciable after-images and thus are no more than limits. As for the muscular tension, it appears to him to vary in the way of waning from the initial height to zero and of then waxing (in representation). But he observes that this twofold process, when occupying the foreground of consciousness, appears to undergo a certain retardation—with the obvious result of enabling it (in the experimental case) to fill up somewhat longer intervals than it else, naturally, would. For the rest, when the interval is not too great to be beyond the compass of any possible drawing-out of the whole process, he finds that now one now another combination of the two stages (of waning and waxing) may be employed to span it. All that is necessary is, that whatever combination served to fill up the given 'normal time' be reproduced (in imagination) as exactly as may be for the 'comparison-time' that has to be equated.

So far the general scheme; but, to understand how the strains can have their waning and waxing thus variously combined, note must be taken of the precise muscular acts involved. While it is matter of common experience how directly sounds, beyond all other sensations, pass over into movement of limbs, it is rather in action of head, neck and shoulders, with related parts, that the attentive attitude of listening consists, joined of course, with tension of the muscles inside the ear itself. But, in watching himself when on the strain to get a measure of time-interval, Münsterberg is most of all struck with the part played by the great periodic function of breathing. So massive as this is in its alternating rhythm of inspiration and expiration, he finds it cannot proceed in either phase without modifying the state of tension in which the connected muscular parts happen to be. If the strain of attentive hearing is in process, of being relaxed, the waning is helped by expiration; on the other hand, the gathering tension of expectancy comes to a head the more readily as the breath is drawn in. The effect of either kind, he gives reason for supposing, is wrought through the special nerve-centre of respiration; but, however this may be, the breathing-rhythm is, in his experience, so dominant a factor in all attempts at experimental estimation of time that the fact of its having been overlooked by previous investigators is, for him, enough to render all their results of no account. If it so inevitably and powerfully affects the varying strain of the attentive attitude, the very first thing to be considered would seem to be the precise stage of the breathing-process from which the experimental reckoning begins to be made. But its part in the work of time-estimation does not stop there. In the case of relatively longer intervals—that is to say, such as are beyond the span, however drawn out, of the twofold process of waning and waxing tension directly involved in the listening attitude—the breathing-rhythm may itself become the chief, if not the only, means of time-measurement. In that case, Münsterberg finds it subject to a variety of modifications. First, the respiratory act appears to him, like other muscular tensions, to get drawn out when consciously attended to; thus acquiring more span or measuring-power within the single period. Then, while normally there is a pause between the end of expiration and the beginning of inspiration (amounting to about a third of the whole breathing-period), he observes that this is apt, in the experimental attitude, to drop out; with the result that the function, become thus continuous, gains increased efficiency for measurement. Again, he notes himself as at times actively forcing both inspiration and expiration (the latter of which, in normal circumstances, is left to simple elasticity of lung), thus making several short respirations within the regular period of one; the accommodation being obviously directed to the procurement of uniformity of breathing-phase between the two time-intervals. And, once

more, in the case of such times as surpass the possible duration of the most protracted single act of respiration, he remarks the tendency to keep up a certain convenient rhythm of breathing, which, though it never passes into the form of numerical calculation, gives the most effective means of comparative estimate.

After such careful reckoning with his experience under the special conditions, Münsterberg proceeds to argue that the variety of our common judgments of the lapse of time depends, no less than in the experimental case, upon the degree to which expectant strain (ultimately muscular) is present with the impressions of any kind that are being received; and, again, that the facts of time-memory, even when this illusorily reverses the original judgment, in no way conflict with the view he has obtained of the actual factors involved in time-measurement. Next, by close examination of what is expressed or implied in the records of previous experiments, he is led to the conclusion that the true reason of the marked discrepancy of numerical results is to be sought in their authors' disregard of the precise factors involved, more especially the all-dominating breath-rhythm. If the periodicity of some kind noted by all the Leipsic experimenters in their time-estimation points to the implication of such a periodic factor as the respiratory function, then obviously the (overlooked) differences of breathing-phase in which by constitutional habit or by chance they made their estimates may well account for their discrepant figures. Both arguments—too pertinent to the matter in hand to be fairly called digressions—are very acutely, and more than plausibly, worked out by Münsterberg. But, attention having been thus drawn to one of the most interesting parts of his whole memoir (pp. 43-54), it is of more urgency here not to omit following him into the concluding section (pp. 54-68) where the results of his subjective analysis are brought to the test of experiment.

It is but a small part of the whole mass of time-experiments he has made that Münsterberg cares to give even the most summary account of. Following in general the Leipsic manner of experiment at its highest development, but improving upon it by reduction of the amount of motor reaction called for in the estimator (an important matter in such delicate work), and by having the 'comparison-time' closed as well as begun, like the 'normal time,' with sound of hammer-stroke (thus equalising the conditions of expectancy as never before), he made a very large number of trials with another person as estimator, on the line of the earlier experiments, going up from 1 to 5 sec. intervals, by  $\frac{1}{2}$  sec. steps. All these he leaves aside, as of no more real value than the Leipsic results; any periodic law that could be got out of the figures having no validity so long as the determining factors in the estimator's consciousness are not accurately assigned. He gives instead, in compendious form, only the results of some other series of experiments with himself as estimator; an assistant being employed

to fix the intervals for which equation was sought. These were advisedly taken of a length, from 6 to 60 sec., such that the subjective conditions could be marked with some certainty.

In the first series, the 'comparison-time' was estimated without pause on completion of the 'normal time' propounded, but under these different circumstances. (1) It was left to the assistant to propound intervals in pell-mell order (*e.g.*, 15, 7, 22, 18, 24. . . sec.) without reference to Münsterberg's breathing, who in turn made his comparative estimate without altering in any way the regularity of its natural rhythm. (2) The assistant was required to keep close watch and propound only such intervals (though again in pell-mell order and without too violent contrasts, *e.g.*, 11.5, 14, 7.2, 16.4, 21.6. . . sec.) as should make Münsterberg begin his estimate at precisely the same stage of the whole breathing-process as he was in at beginning of the given 'normal time'. No 'constant error' (*i.e.*, of over-estimation or under-estimation) appearing after many trials, all the errors, in percentage relatively to the 'normal time,' were put together for (1) and (2) separately; and, then calculating out the mean error, Münsterberg found this to be as much as 10.7 per cent. for (1) and as little as 2.9 for (2). A very marked difference, truly.

In a second double set of experiments, the same difference of circumstances was repeated, except that the estimate had now to be made after a pause varying from 1 to 60 sec.; that is to say, instead of using the second stroke, which closed the 'normal time,' as initial limit of the 'comparison-time,' this was given by a third stroke. Here (1), where no regard was had to breathing-rhythm, the mean error rose (from 10.7) to 24 per cent.; but (2), where care was taken to have the comparative estimate begun, as far as possible, at the same respiratory stage with the 'normal time,' the mean error rose (from 2.9) only to 5.3 per cent. A not less remarkable result.

In face of these figures, if they are even approximately confirmed by other experimenters, it seems impossible to doubt that breathing has a prerogative position among the sense-factors concerned in the estimation of short time-intervals; and it is much to be hoped that the whole subject will be taken up again, at Leipsic or elsewhere, with express reference to Münsterberg's path-breaking analysis or at least not without similar attempt at prior determination of the precise content of the time-experience which it is sought to measure. But, in itself, breathing is of course only one among other muscular factors involved, and the general outcome of the novel research, so far as yet carried, is to bring impressively into view the import of muscular activity for psychological explanation. A subsidiary series of experiments, too slightly indicated, goes some way to supplying the confirmation that comes by negative instance. Münsterberg tried time-comparison by means of a set of voluntary tensions and relaxations (not said what) slowly carried out so as to be independent of

the breathing-rhythm; and here the estimate was still good and sure. But when he proceeded to estimate for intervals between 3 and 10 sec. without regard to (felt) tensions of any kind, not all his foregone practice in time-comparison was of any avail to save him from such arbitrary 'shots' as taking 12 sec. to be equal to 4 or, again, 3 to 9. If the facts were so, their significance seems greater than Münsterberg cares to claim against the possible objection that among the subjective data disregarded may have been the very 'Time-sense' whose existence is in question. The objection cannot well be urged, since the supposed 'Time-sense,' taken to be a direct activity of pure consciousness, cannot properly be expressed in terms of the (felt) muscular tensions and relaxations of the experiment.

What Münsterberg may in any case be fairly credited with having accomplished, is to bring the conscious activity of time-estimation into relation, hardly before suspected, with a definite basis of sense-experience. The name 'Time-sense' thus has more justification than it ever got from its inventors, for whom it has marked only the apparent immediacy of time-apprehension. But yet, as we do not properly speak of a 'Space-sense' except to indicate that there are sensory elements necessarily involved in all space-apprehension, so should it be also with 'Time-sense,' whenever the psychological account is finally made up of which he has here done a good deal more than give the first sketch. The memoir, as a whole, seems to me at once so interesting and important that I have preferred to use the available space for a somewhat full summary of it, rather than for critical remark. Question might be raised at a good many points. For example, it is not clear how the author can psychophysically interpret the act (on which he lays stress) of attending to the waning and waxing of the muscular tensions, which are for him the means of attending to the limiting sounds of the experiment. But whatever other difficulties might be noted in the research, whether of principle or detail, they leave untouched its character of rare suggestiveness.



## VI.—DISCUSSION.

### MR. SPENCER'S DERIVATION OF SPACE.

By Professor JOHN WATSON.

In the last number of *MIND* Mr. Spencer expresses his indignation against certain of his critics whom he calls "Kantists," or "Neo-Kantists". The "Neo-Kantist," he declares, systematically avoids real issues, "deliberately ignores" the arguments of Mr. Spencer, and pays no heed to the "six objections" and "four impossibilities of thought" shown to be against his own doctrine. Add to this that these arts are employed in support of the superstition of the "production of mind" by "supernatural endowment," and it is not surprising that Mr. Spencer, after discharging a Parthian arrow, has ridden off and left him to his fate.

With the "Neo-Kantist" of Mr. Spencer's imagination I have no acquaintance, but as Mr. Spencer classes me under that name, perhaps I may be allowed to say a word in his defence. I should like to show, if I could, that Mr. Spencer has been a little too severe.

Mr. Spencer complains that, instead of defending the Kantian doctrine against his attack, the "Neo-Kantists" have made a counter attack, their aim being to avoid an issue which they could not meet (*MIND*, No. 59, p. 306). I should be inclined to give a somewhat different explanation. Two good reasons may be suggested for not dealing with Mr. Spencer's "six objections" and "four impossibilities of thought". In the first place, the "Neo-Kantists" do not hold space to be a form of perception as distinguished from thought, nor do they accept Kant's doctrine of the subjectivity of space. Under these circumstances Mr. Spencer's heavy battery did not affect them so much as might have been expected. But, secondly and mainly, the answer to Mr. Spencer's "six objections" and "four impossibilities of thought" could only have consisted in showing that in important points—one or two of which will be indicated in the sequel—Mr. Spencer has misconceived the argument of Kant. I venture to suggest these reasons for the neglect by the "Neo-Kantists" of Mr. Spencer's "six objections" and "four impossibilities of thought". These at least were my reasons, whatever may have been the motives of my fellow-culprits. Mr. Spencer will, I hope, allow them to have weight, and to be on the whole more creditable to human nature than the one he has suggested.

My next offence is one, the responsibility for which, un-

fortunately for me, I must bear alone. It seems that, in my *Kant and his English Critics*, p. 262, I "deliberately ignored" the chapters in Mr. Spencer's *Psychology* in which his view of space was "justified" in 42 pages, "preferring" to base my criticism "on a brief summary" of 3 pages (*MIND*, No. 59, p. 306). Now, here again I must put in a plea for myself. I can assure Mr. Spencer that my motive for "ignoring" his "justification" was not what he supposed it to have been. What was to be explained was the consciousness of co-existence or the mutual externality of every part of the extended world, and Mr. Spencer's "summary" showed that he believed it to be derivable from discontinuous individual feelings as simultaneous and successive. I endeavoured to show that such a derivation is from the nature of the case impossible: (1) because individual feelings cannot account for any knowledge whatever, and, (2) because even if the consciousness of feelings as simultaneous and successive could be derived from individual feelings, we should be as far as ever from accounting for the consciousness of co-existence. It was therefore unnecessary to follow Mr. Spencer in his elaborate attempt, extending over 42 pages, to "build up a stable universe out of evanescent sensations," as I ventured to put it. But as Mr. Spencer has misunderstood my reticence, and has taken the pains to restate his view "in a briefer and partly different way," courtesy seems to demand that I should explain why I am not convinced even by this new effort to enlighten my ignorance.

The fundamental position of Transcendentalism—or Idealism, as I should prefer to call it—is, that the universe is intelligible, and that man in virtue of his intelligence is capable of grasping it in its essential nature. It therefore rejects as unmeaning the doctrine of Mr. Spencer that we know reality to be unknowable. Idealism further maintains that nothing exists for knowledge apart from thought, *i.e.*, apart from the activity by which the subject discriminates the various elements implied in reality, and combines them in the unity of one world. The ultimate principle of unity it finds in self-conscious intelligence, by reference to which it interprets all the other phases or elements of reality. It does not deny the value of the results obtained by bringing existence under such categories or forms of unity as space, time, matter, motion and energy, but it affirms that, unless these results are reinterpreted from the higher point of view of intelligence, we have a philosophy that breaks down in self-contradiction. Idealism also refuses to admit that existence can be explained by showing that in the order of time the inorganic precedes the organic, as sensation precedes thought. What precedes is, speaking generally, an imperfect and inadequate phase of what follows. The lower animals do not reflect the world better than man, but worse. That man is descended from some lower form of being, Idealism does not dispute, nor does it deny that the human race, like the individuals who now come

into existence, passes from one phase of existence to another. The idealist has no difficulty in admitting that man is at first a purely sensitive being. But, granting sensation to precede that first consciousness of what sensation means which may be called perception, as perception is followed by reflection, he maintains that in perception the true nature of existence is exhibited more perfectly than in sensation, in reflection more perfectly than perception. An idealism of this type does not hold the "hypothesis of pre-determined forms of thought"; what it maintains is, that in the development of man there emerges out of sensation a consciousness of the meaning of sensation, and that in this consciousness, and in this consciousness alone, reality is recognised to imply in all its aspects and changes certain fixed forms of relation or unity. Of these forms the simplest is that of space or the mutual externality of perceptible objects. In perception the consciousness of space has not yet assumed the reflective form which it has for the mathematician, and for every one who makes it a direct object of attention, but it is implied in the perception of objects as outside of one another. Because it is a form of relation, space is a possible object only for a thinking, as distinguished from a sensitive, subject. Hence any attempt to derive space from sensation alone is an attempt to identify what by definition is individual and fleeting with what is universal and permanent; it is, in fact, an attempt to deny that there has been any evolution. For evolution is not simply the transition from one phase of existence to another, but a development from lower to higher. This distinction between succession and evolution Mr. Spencer seems to me to overlook. He thinks that our consciousness of space has been "composed out of units of thought which were different and discontinuous"; in other words, that because perception has been preceded by sensation and has emerged from it, perception is in its essence identical with sensation. Now, surely one may admit that man has passed through a stage in which intelligent experience as yet was not, without admitting that intelligent experience may be explained without intelligence.

Idealism has no quarrel with those who point out that the individual man is sensitive before he is conscious, or even that by the previous development of the race he is now capable of rising from the sensitive to the conscious stage more rapidly than his less fortunate remote ancestor; but it denies that the slowness or rapidity of the development affects the distinction between consciousness and sensation as higher and lower. Perhaps an illustration may make the matter plain. Mr. Spencer contends (p. 322), that his own derivation of space combines the relative truth of the "Experience-hypothesis in its original form," with the relative truth of the "Kantian hypothesis"; in other words, that his theory has been evolved out of the less perfect theories of his predecessors. Would he therefore say that it is neither

new nor true? Would he not rather say that it has brought into clear consciousness what was previously held in a confused and inadequate way? Similarly, idealism maintains that the nature of space is not affected by the time when the individual comes to the consciousness of it. Space is what it is, whether we suppose it to be present to the individual at the moment of his birth or not till the moment of his death, just as even a death-bed conversion to Mr. Spencer's theory of space would in his view be a real progress from the false to the true, or at least from the inadequate to the adequate.

Mr. Spencer asks (p. 308) if I "think that at the moment the newly-born infant first closes its lips round the nipple, it knows its sensations in connexion with their respective universals". I certainly do not, nor do I think the "newly-born infant" has any "intelligent experience". In asking such a question, Mr. Spencer shows that he misapprehends the idealistic view of space in two ways. In the first place, idealism does not hold that knowledge implies the reflective consciousness of universals as such. The consciousness of space, as it is dealt with by the mathematician, belongs neither to the stage of sensation, nor to the stage of perception, but to the stage of reflection, which many persons never reach at all. To show that a man has no reflection or abstract consciousness of space does not show that he has no perceptive consciousness of it. Perception, as we understand it, is the consciousness of objectivity, *i.e.*, of fixed or permanent relations, but it need not involve the explicit consciousness of any one of these relations held before the mind as a separate object of attention. Even, therefore, if it were maintained that the "newly-born infant" had a perceptive consciousness of space, it would not follow that it "knows its sensations in connexion with their respective universals". But, secondly, we do not hold that every human being at every stage in its development has even a *perceptive* consciousness of an objective world. We have no fault to find with Mr. Spencer's statement that "Knowledge slowly emerges" out of what is not Knowledge, but we contend that it is not Knowledge until it emerges, and that it is therefore vain to attempt its explanation by what is not Knowledge. Just as we deny that a mineral is alive and grows, and that a plant is sensitive, so we deny that a sensitive being is conscious. That consciousness has developed out of sensation we admit, but we maintain that it is a *development* and not a mere *transition*, and hence that in consciousness is to be found the key to the nature of reality as including sensation, not in sensation the key to consciousness. I do not know that I can make my meaning clear in any better way than by stating my objections to Mr. Spencer's derivation of space as expounded in his recent article. In doing so I shall pass over his misleading analogies from mathematics, physics, and other sciences—not because I wish to gain a controversial advantage, but because a doctrine which is fundamentally

unsound cannot be established by any number of analogies however ingenious and plausible they may be.

In the course of his attempt to show how our consciousness of space has originated, Mr. Spencer will be found, I think, to make the following assumptions: (1), that the occurrence of a sensation is the same thing as the consciousness that a sensation has occurred; (2), that the conscious subject is primarily aware only of his own feelings as successive or simultaneous; (3), that the consciousness of simultaneous feelings is identical with the consciousness of co-existent positions. Each of these three assumptions seems to me to be unwarrantable, and therefore to vitiate the whole derivation.

To aid us in imagining the process by which man has reached the consciousness of space, Mr. Spencer conducts us into a dark room, and bids us exclude from our consciousness all the "space-suggestions implied by visual and tactual perceptions". What remains are "those sensations of changing muscular tension which accompany movements of the limbs, and which, in the absence of space-knowledge, are still known as continuous slight efforts, varying according to the muscles contracted and the degrees of their contraction". There is also "experience of the ability to produce and reproduce those slight serial feelings without check" (p. 315). Now, let us be perfectly clear as to what Mr. Spencer here supposes the condition of the undeveloped individual to be. He has no consciousness of space. This I understand to mean, not merely that he has never made space a separate object of attention, but that he is unconscious of outness or mutually external positions. Such a being would have no consciousness of "accompanying movements of the limbs," which evidently imply the consciousness of externality of parts and of motion. Nor would he be conscious of certain sensations as those of "changing muscular tension," for this also would involve the consciousness of externality and motion. We must therefore suppose the primitive consciousness to be simply that of vague feelings occurring the one after the other. To a thinking being contemplating the individual in question, it would be apparent that he was the subject of "those sensations of changing muscular tension which accompany movements of the limbs," but the subject himself could not have this highly complex form of consciousness. I understand Mr. Spencer to admit this when he tells us that "an impression of resistance. . . may be conceived as occurring in a rudimentary consciousness without any idea of a causing object" (p. 309). Mr. Spencer assumes, however, that the subject in question would be conscious of certain sensations as serial; in other words, he would distinguish one sensation from another by its degree, and would be conscious of these varying sensations as following one another. That is to say, Mr. Spencer assumes that the feeling subject is primitively conscious of the degree and the succession of his sensations. I deny Mr. Spencer's right to

make that assumption. If the primitive subject is conscious of varying sensations (or identical sensations, if Mr. Spencer prefers it) as serial, and of these sensations as belonging to himself, the single subject which has them, he is not a purely sensitive but a thinking consciousness. If, on the other hand, the subject does not discriminate his sensations as varying and as serial he is not conscious that they have degree or are serial, much less is he conscious of himself as the single subject which experiences all alike and unites them in one consciousness. Now, Mr. Spencer says nothing to show that he supposes himself to be dealing with a thinking as distinguished from a sensitive subject, and it is for this reason that he ostensibly derives the consciousness of space from "discontinuous units," when in reality he is surreptitiously introducing relations of thought. I hope it will not be supposed that I am denying that the subject is primarily sensitive and not perceptive, or that without sensations of muscular effort we should not have the consciousness of space: what I am denying is that the purely sensitive subject is aware of his sensation as having degree, as occurring in a series, and as belonging to his single identical self. A purely sensitive subject can only be the medium of the occurrence of individual feelings, and until he emerges from the sensitive stage and becomes conscious of what occurs within himself, he cannot be aware of having experienced a series of sensations varying in degree. Mr. Spencer has, therefore, at the very threshold of his reconstruction of the process by which the consciousness of space is supposed to be derived, made the first of the assumptions mentioned above, *viz.*, that the occurrence of a sensation is the same thing as the consciousness of that occurrence, *i.e.*, that sensation and perception are identical. Having done so, it is only natural for him to imagine that he has derived perception from sensation, *i.e.*, that perception is identical with sensation. When relations of thought are already assumed, they do not need to be explained.

And not only does Mr. Spencer assume that a series of feelings is the same thing as the consciousness on the part of the individual that he has been the subject of such a series, but he also assumes that the primary consciousness of the individual is only of his own states as successive. Now, granting that a sensitive subject is not only the medium of sensations but is conscious of being such a medium, why should it be assumed that he is primarily conscious of succession but not of externality? For no other reason, I believe, than the unfounded assumption that there is a direct consciousness on the part of the subject only of his own subjective states, while the consciousness of all that is extended is indirect. Thus Mr. Spencer's derivation of space is vitiated, not only by his failure to distinguish between the occurrence of sensations and the consciousness of their occurrence, but by that absolute opposition of internal and external which has come down from the imperfect metaphysic of Locke.

Let Mr. Spencer discard the two assumptions to which I have drawn attention, let him exclude from his data the consciousness of degree and succession as well as of externality, and get rid of the unwarrantable opposition of internal states and external objects—which, even if it were true, could not exist for a purely sensitive subject—and I think he will find the attempt to derive the consciousness of space from “discontinuous units” not so easy as he has made it for himself.

But I have not yet done with Mr. Spencer's assumptions. It is plainly assumed by him that the primitive subject is able to distinguish different series of sensations and yet to identify them as regards their content, for he speaks of “the ability to produce and reproduce slight serial feelings without check”. The primitive subject, then, is not only the medium of different series of sensations, but is conscious of having experienced such different series. Need it be said that such a subject is not merely sensitive, but, in the sense already explained, perceptive?

It is unnecessary to follow Mr. Spencer through the whole of his attempted derivation of space from individual feelings. At each step he introduces more complex relations of thought. Thus he exhibits his sensitive subject as becoming conscious of a double series of sensations, and so as becoming aware that they are simultaneous. That a subject which thinks its sensations becomes conscious of distinct series of feelings as simultaneous is certainly true, but it is not true that a purely sensitive subject would know the series either as distinct or as simultaneous. Nor would such a subject be aware of a series of feelings as “reversible,” and therefore it would never attain to a “general experience”.

Let us now see how Mr. Spencer effects the *saltus* from simultaneity to co-existence. Taking hold of a book, the subject experiences two simultaneous, or rather rapidly successive, sensations of touch. In a previous experience two such sensations were “separated by serial feelings of effort occupying an interval of time”. Further, the two sensations simultaneously received may occur in succession with an intervening reversible series of sensations of touch and tension, or of tension only. The subject now becomes aware that what occurs in succession may also occur simultaneously; hence the time-element drops out, and he becomes conscious of co-existence. Here, then, we have the consciousness “out of which the consciousness of space is to be built” (pp. 316-17).

Does Mr. Spencer seriously mean to say that the consciousness of sensations as simultaneous is identical with the consciousness of co-existent position? Or does he rather mean that the dropping out of the “time-element” altogether is equivalent to the consciousness of co-existence? If the latter, is it not obvious that the subject would simply be left with the consciousness of discrete sensations as differing in intensity and quality, without



being conscious of co-existence? The absence of the "time-element" or that which answers to the "time-element" is not equivalent to the presence of the space-element or that which answers to the space-element. I think, however, that by the disappearance of the "time-element" Mr. Spencer means what he curiously calls "two consciousnesses which co-exist," that is, I presume, the consciousness of two simultaneous feelings. But two simultaneous feelings are not external to each other in the sense in which one position is external to another. If I hear two sounds simultaneously, does that prove them to occupy mutually external positions? If so, they must be in space. Now, Mr. Spencer makes it a special charge against the "Neo-Kantists" that they imagine space to be a form of all perceptions, and therefore of sounds and odours. In point of fact the "Neo-Kantists" do nothing of the kind, but the charge shows that Mr. Spencer, when he is not attempting to derive space from individual feelings, is quite aware that the consciousness of simultaneous feelings cannot be identified with the consciousness of co-existent positions. After all his elaborate scaffolding, therefore, Mr. Spencer has not accounted for space at all, but has simply assumed it. I do not think that his failure is due to any want of ingenuity; I believe it to be the inevitable result of the mistaken attempt to explain the perception of permanent objects apart from the activity of thought as interpreting the contents of the sensitive subject thus so gradually coming to a more and more complete consciousness of what existence is and means. Mr. Spencer and others have done good service in drawing attention to certain outward aspects of the evolution of mind, but no psychology can be adequate which does not recognise that perception is not the mere occurrence of transient feelings, but the first step in that recognition of the true nature of reality which culminates in the comprehension of the world as a single organic unity of which the source and explanation is intelligence. Mr. Spencer admits that his interpretation "takes for granted the existence of objective space, or rather of some matrix of phenomena to which our consciousness of space corresponds" (p. 323). Precisely; the world is by Mr. Spencer assumed to be independent of mind and to act mechanically upon it. To this view I have stated my objections at length in the tenth chapter of my book, and I need not repeat them here: I simply call attention to the fact that, tried by the test of its ability to explain intelligible reality—which is the "criterion of truth" that Mr. Spencer taunts me with refusing to give (p. 307)—Mr. Spencer's interpretation of space breaks down in the self-contradiction that we know space to be unknowable. From this self-contradiction there is no escape but in the doctrine that the real world reveals itself in self-conscious intelligence.

## DR. PIKLER ON THE COGNITION OF PHYSICAL REALITY.

By G. F. STOUT.

Dr. Pikler has published in *MIND* No. 59, and also in a postscript to his book *The Psychology of the Belief in Objective Existence*, a hostile criticism of my article on "The Genesis of the Cognition of Physical Reality," which appeared in *MIND* No. 57. His leading motive in attacking me is to defend Mill's theory of permanent possibilities against my objections. Unfortunately, he does not seem to take account of the exact point in dispute. He appears to assume that I have called in question the correctness of the doctrine of "Possible Presentations," considered as an analysis of the nature of matter from the point of view of metaphysical reflexion. This I have not done, because I had no occasion to do so. My sole aim was to trace the genesis of the presentation of physical reality as it appears to the ordinary consciousness: not as it may be modified, and perhaps rectified, by the reflective criticism of this or that philosopher. Now, what I have to urge against Mill is simply and solely, that he has confounded his own philosophical view of physical reality with the view which men ordinarily take when they are not in a philosophical mood. His error is analogous to that of an astronomer who should suppose that to the ordinary observer the sun appears to remain unmoved while the earth moves, because this appearance would be in keeping with astronomical truth. I have indicated in my article—though, perhaps, not with adequate emphasis—that my criticism of Mill had reference to this special question, and to this only. If I had raised any other, I should merely have involved myself in a useless digression. Dr. Pikler's misapprehension of my meaning has led him to require from me a proof that the theory of "Possible Presentations" is internally inconsistent or otherwise untenable as a metaphysical account of the nature of matter. Now, I never had occasion to show that Mill's theory was inconsistent with itself. My whole aim was to exhibit its disagreement with the uncritical view of common sense. I have indicated what I take to be the points of disagreement. Whether they are so or not, must, in the last appeal, be decided by the general consensus of those who have sufficient philosophic training to understand the question.

Let us now turn to the special objections urged against me by Dr. Pikler. I have turned against Mill the saying of Leibniz that a "naked possibility is nothing," taking care to show that physical things are, according to Mill's account of them, in the strictest sense "naked possibilities". Dr. Pikler replies that possible presentations belong to a "certain class of actualities". They are, he says, actual possibilities. It seems needless to

point out that to reason in this way is merely to juggle with words. The mental representation of a possibility is an actual existence, just as the mental representation of a fiction is. But the possibility itself is not on that account an actuality any more than the fiction is a fact. The possibility may, by a strained use of language, be said to be actual, if certain actual conditions exist which only need to be supplemented by certain others in order to produce its realisation. Thus, it would not be altogether nonsense to say that an acorn is the actual possibility of an oak. But Mill's possibilities are not actual in this sense. Are they so in any sense? I can think of one only, and this borders closely on nonsense. We may, perhaps, say that a possibility is actual, because it actually is a possibility, just as we may say that an untruth is a true untruth, because it is truly untrue. If this be the kind of actuality which Dr. Pikler would vindicate for the "permanent possibilities of sensation," I certainly have no wish to gainsay the claim. I claim for myself, however, a similar licence in the use of words. He says that physical things are, according to Mill, actual possibilities, *i.e.*, actually possibilities. I say that they are, according to Mill, actual nothings, *i.e.*, actually nothing. In saying so I am not contradicting Dr. Pikler: I am asserting precisely the same thing.

So far, I have endeavoured to meet Dr. Pikler on his own ground. I must now point out that the issue raised by him has no decided bearing on the only question which I had in view when I wrote my article. Dr. Pikler may, if he so chooses, call possibilities actualities. He has still to show that the kind of actual existence which alone can be attributed to a naked possibility is also the kind of actual existence which common sense ascribes to physical things. Now, the utmost that he or I can do in this matter is to state what we find to be our own experience, and to appeal for corroboration to the experience of others. So far as I myself am concerned, I can only say that when I am directly thinking of physical things, and not merely of metaphysical theories concerning them, I represent them as possessing, independently of me and of other finite minds, the same kind of actual existence which belongs to a thought while I am thinking it, or to a sensation while I am experiencing it. Dr. Pikler gives evidence apparently opposed to mine. But there seems to be a flaw in his method of self-observation. He takes notice of his mental attitude in considering metaphysical theories of matter, rather than in considering material things themselves. He says: "I, for my part, find nothing in my consciousness diametrically opposed to Mill's account. On the contrary, when, ignorant still of philosophy, I first heard these doctrines, they appeared to me as irresistibly true." I can readily believe Dr. Pikler. My own experience on first reading Mill was precisely the same. But would Dr. Pikler conclude, because he was easily and irresistibly convinced by the first treatise on Astronomy which he read, that,

therefore, he naturally thinks of the earth as moving and of the sun as motionless? By parity of reasoning, he ought to do so.

Turning now from Dr. Pikler and myself to other witnesses, I shall adduce two whom he evidently respects, Berkeley and Hume. Berkeley regarded his own doctrine as an assertion of the view of common sense in opposition to the figments of philosophers. But according to him the actual existence of material things by no means consists in the mere possibility of their being presented. It consists in his opinion in their actual presentation, (1) to finite minds, (2) to the Divine Mind. Hume's well-known deliverance concerning the belief of the ploughboy as to the continued existence of his plough, is all the more impressive, because Hume held the ploughboy to be under an illusion. In my article I referred to certain phrases used by Mill, which seemed to me to show that he himself did not always think of physical things as mere possibilities. I now again appeal to the reader to consider this point. Is it likely that any one should speak of a possibility as changing or as occasioning change in other possibilities, unless he for the moment regarded it as more than a naked possibility? Dr. Pikler substitutes other words for those of Mill, more consonant with the general tenor of his doctrine. He fails to see that my contention is entirely based on the particular form of expression which Mill has permitted himself to employ. I explicitly say in my article:—"This criticism applies rather to Mill's terminology than to the real import of his doctrine. The essence of his theory is that physical reality can be shown by analysis to consist in the fixity of the order in which actual sensations occur, and in which possible sensations would occur if we actually experienced them." This explanation is identical with Dr. Pikler's. Against Mill's theory, thus formulated, I bring forward the Kantian distinction between "objective judgments" and "judgments of perception," and I quote the following familiar passage:—"The apprehension of the manifold in the phenomenal appearance of a house, that stands before us, is successive. The question then arises whether the manifold of the house itself be successive, which, of course, no one would admit." Dr. Pikler observes: "This objection can be easily disposed of. That the different parts of the house are co-existent does not mean, according to Mill's theory, that there is a possibility of perceiving them simultaneously, but it means that there are a number of different simultaneous possibilities of presentations from amongst which the individual may select any at will." I agree with Dr. Pikler that this is what Mill meant. I never supposed him to mean anything else. The point of my objection will be best elucidated by an illustration. I can at this moment utter aloud any letter of the alphabet I choose. The sounds of the several letters are for me "simultaneous possibilities of presentations from amongst which I can select any at will". Why, then, do I not regard these sounds as co-existing with each other?

Why does the possibility of series of successive sensations which may at will be experienced in this or that order give rise in the one case to the presentation of physical co-existence and not in the other?

I have now fully dealt with that part of Dr. Pikler's postscript which bears on my treatment of Mill's theory. Something must next be said in reply to his criticism of my own. I am here compelled to be brief. But I hope, at no very distant date, to have an opportunity of considering more at length Dr. Pikler's strictures on myself, and also his own positive contribution to the "Psychology of the Belief in Objective Existence," which I value highly.

I am greatly surprised by my critic's remarks on that section of my paper which is entitled "Antithesis of Mental Activity and Passivity". Why does he say that I regard it as the most essential part of my theory? In the first draft of my paper, which was read before the Aristotelian Society, I dismissed the point with a brief and incidental notice. I did so because I judged it needless to dwell on a topic with which every psychologist might be supposed to be familiar. I afterwards inserted § 5 in my article because I thought that I could state the common doctrine in a somewhat more comprehensive and accurate form than the ordinary one. But, in substance, there is nothing in § 5 which is not very old and very well known. Yet, according to Dr. Pikler, the contrast of mental activity and mental passivity is the discovery only of a "few more modern psychologists". It is, on the contrary, to be found in the works of psychologists of all ages from Plato to H. Spencer. It is at bottom identical with Spencer's antithesis between the "vivid order" and the "faint". It was in Plato's thoughts when he described the vehement influx of sensations disturbing the harmonious motion of the circles of the Same and of the Other. It is more or less clearly expressed in Descartes, Locke, Berkeley and, I believe, in Hume. I must here content myself with a single quotation from Locke: "When my eyes are shut or windows fast I can at pleasure recall to my mind the ideas of light or the sun, . . . so I can at pleasure lay by that idea and take into my view that of the smell of a rose or taste of sugar. But if I turn my eyes at noon towards the sun, I cannot avoid the ideas which the light or sun then produces in me. So that there is a manifest difference between the ideas laid up in my memory . . . and those which force themselves upon me and I cannot avoid having. And, therefore, it must be some exterior cause . . . that produces these ideas in my mind whether I will or no." We may, I think, safely affirm that the antithesis of mental activity and passivity is neither obscure in itself nor neglected by psychologists. So much for the first two facts which, according to Dr. Pikler, are sufficient to refute my view on this particular point. Dr. Pikler's third fact really is a fact—or, rather, it

is two facts. The first of these is that interruption of the flow of ideas is caused by organic sensations and by sudden flashes of thought, as well as by sense-impressions arising from objects external to the body. As regards sudden flashes of thought, I reply that when a thought emerges which is disconnected with the immediately precedent train of ideas there is commonly a felt continuity between its appearance and some previous mental process. If, for example, after I have endeavoured unsuccessfully to recollect a name, the name occurs to me of itself while I am thinking of something else, I then mentally connect the emergence of the name into consciousness with my previous effort to recollect it. It must, however, be admitted that some cases do not admit of this explanation. But these cases are really in my favour. When there is no felt continuity between the emergence of ideas into consciousness and previous mental process, there is a disposition to refer them to the operation of some kind of external agency, *e.g.*, spirits, demons or divine inspiration. This statement is abundantly borne out by pathological evidence. Interruptions of the flow of ideas arising from organic sensations are also in general referred to an agency external to the mind affected. Ordinary variations of the *cœnæsthesis* are attributed to ordinary organic changes, *e.g.*, in the state of the stomach, liver, &c. Extraordinary variations, such as occur in certain pathological cases, are attributed to extraordinary causes, and so give rise to many of the illusions and delusions of the insane. The other division of Dr. Pikler's twofold fact is simply that the order of impressions has a certain regularity as well as the order of ideas. What of that? The beating of a drum may occasion a very regular series of sensations. But it may nevertheless grievously interrupt the inward flow of ideas.

Finally, I have to notice an alleged flaw, which according to Dr. Pikler pervades my whole treatment of the genesis of the presentation of physical reality. The general nature of the objection will appear from the following quotation. "According to Mr. Stout, the child at that age (as soon as it begins to employ coherent sentences) must have got beyond this observation, generalisation and inference;—'An agency operates within me in orderly and normal fashion. It is sometimes interrupted. When this happens, it is the effect of an external agency.' . . . This cannot be correct. In point of fact such observation and generalisation cannot really be performed by the child." The same argument, *mutatis mutandis*, is urged by Dr. Pikler, against every part of my work which he has thought good to notice. In reply, I quote a passage from Brown who long ago anticipated and answered the objection:—"I am aware that the application to an infant of a process of reasoning expressed in terms of such grave and formal philosophic nomenclature has some chance of appearing ridiculous. But the reasoning itself is

very different from the terms employed to express it, and is truly as simple and natural as the terms which our language obliges us to employ in expressing it are abstract and artificial. The infant has the reasoning, but not the terms. He does not form the proposition as universal and applicable to cases which have not yet existed; but he feels it in every particular case as it occurs." Brown's teaching on this point is illustrated and corroborated by the results of modern psychology. Dr. Pikler must surely know how complex are the processes involved in the visual perception of space-relations, as they are analysed and formulated in such books as Wundt's *Physiologische Psychologie*. Yet these processes take place in the minds of children. From this point of view, the workings of a child's mind are very complicated.

I conclude with a personal remonstrance. Why does Dr. Pikler call me a realist? In general, I dislike being labelled, and I have a special aversion to this particular label. It has no meaning so far as I can discover. Bishop Berkeley is commonly said to be an idealist, but he is a realist if I am one.



## VII.—CRITICAL NOTICES.

*A Text-Book of Mental Diseases*: with special reference to the Pathological Aspects of Insanity. By W. BEVAN LEWIS, Medical Director, West Riding Asylum, &c. With Illustrations in the Text, Charts, and 18 Lithographed Plates. London: C. Griffin & Co., 1889. Pp. xxii., 552.

*Sanity and Insanity*. By CHARLES MERCIER, M.B. ("Contemporary Science Series."). London: Walter Scott, 1890. Pp. xix., 395.

These two books mark an important advance in the positive study of insanity. The lunatic, too long outcast from science as from society, is, like every other abnormality, coming gradually into relation with the great generalities of the normal. As late as 1862, Dr. Hack Tuke, justifying the importance of "demoniacal possession" in its bearing on insanity, found it possible to write: "Either those supposed to be possessed by devils were labouring under simple madness, the result of natural causes; or they were madmen the exciting cause of whose malady was the Evil One. In either case the symptoms were those of madness." Laymen—less probably after reading the book prepared for them by Mr. Mercier—may still find an intellectual satisfaction in assigning insanity to other than "natural causes"; but theoretically at least and for the professional mind "possession," though it has left a trail, has finally fallen from the rank of permissible hypotheses. Twenty years of brain-research have made the correlation of the mental and the physical more definite and less halting; the hierarchy of nerve-centres has displaced the hierarchy of demons. In these two books the positive results of the best research, mental and physical, are applied with steady vision to elucidate the problems of insanity. The details of either book it is not possible to discuss here; what concerns MIND is the contribution to method—to the logic, the psychology and, if it be not an abuse of names, to the metaphysic of insanity.

The title of Mr. Mercier's book—*Sanity and Insanity*—gives a hint of his method, which readers of the *Nervous System and the Mind* will find familiar; the method of the one book is the method of the other. He expounds first the nervous system, next the mind, both in their most general aspects; then, having set forth with clean-cut emphasis the absolute qualitative disparity of the two inseparables, mind and body, he finds himself with data to ask "what insanity is". A chapter of acute distinctions results in this:—

"Insanity, we find, is a disorder of the adjustment of self to surroundings. . . . In every case of insanity there are present all the three factors—disorder of the highest nerve-arrangements, disorder of conduct and disorder of consciousness; and in every case the disorder of consciousness includes disorder of thought and of feeling, of self-consciousness and of consciousness of the relation of self to surroundings. In no two cases, however, are these various factors combined in quite the same way and thus no two cases precisely resemble one another. On the way in which they are combined depends the form which the insanity assumes."

"Self-consciousness" is the correlate of "the visceral circulation of nerve-energy"; "consciousness of the relation of self to surroundings" is the correlate of the "major or sense-muscle circulation of nerve-energy". This convenient formula—a major and minor nervous circulation—expresses, for Mr. Lewis as well as for Mr. Mercier, a distinction of profound importance in insanity. Then come the "causes" of insanity in six chapters. "Insanity is, in mathematical terms, a function of two variables. That is to say there are two factors, and only two, in its causation; and these factors are complementary. . . . These two factors are, in brief, heredity and stress." The laws of heredity and the forms of stress are discussed with some detail and then under the "forms" of insanity Mr. Mercier applies his formerly established generalisations, first, to displace the hordes of unscientific classifications, and, next, to correlate with the normal and exhibit in their genesis the main groups of insanity. And so he has laid down, as it were, the institutes of insanity.

Mr. Bevan Lewis's book, written for other ends, is altogether on a larger scale. It falls into three sections. In the first—the *Physiological*—section, Mr. Lewis, writing as a first-hand investigator and digesting the researches of many years, gives an account of the nervous system. The features he emphasises are the varieties and distribution of the nerve-cell, the lamination of the cortex and the lymph-connective system of the cerebrum. His superb reproductions of microscopic structure, the product of the latest histological developments, are in a fair way to become classical. In the second—the *Clinical*—section, Mr. Lewis, not regarding the refinements of a strictly logical classification, but following largely the common order, describes with great detail the main clinical divisions of insanity. The features of his exposition I shall notice later. In the third—the *Pathological*—section, there is a vigorous and persistent endeavour, better directed than any yet made in English text-books, to find the nervous pathology of mental aberrations in general and the particular lesions in well-defined types, as epilepsy, alcoholism, general paralysis. The pathology becomes a verified physiology—the shattered nerve-mechanism after the nerve-storm.

So far in general. Next let us see how Mr. Lewis and Mr. Mercier meet the special problems of insanity—logical, psychological and metaphysical. This will bring out the characters of

their books compared with each other and of both compared with other works.

1. *Logical.* The logical difficulties of scientific insanity are enormous; for insanity combines the subtleties of psychology with the obscurities of nervous disease. First there is the Definition, which alienists as a rule give up in despair or elaborate into a hopeless muddle. The *débris* of an effete terminology, the remnants of the "possession"-psychology, the continual mixing of standpoints, practical and theoretical,—these, driven by the necessity of organising instruction and treatment, have made the definition of insanity a "function of many variables". Mr. Mercier, whose book is a distinct contribution to the logic of insanity, has at least found a starting-point—the normal; he has marked off a distinct province for scientific analysis—a special form of departure from the normal, and he has shown how a commanding generalisation may be made to correlate normal with abnormal. In this, the *prolegomena* to insanity, he is complementary to Mr. Lewis, who takes for granted much that Mr. Mercier is at great pains to develop. One cannot say that Mr. Lewis's book suffers much in consequence; for he is careful to define each group of phenomena at the beginning of his exposition. But one need not accept every detail of Mr. Mercier's argument to recognise that his definition and his way of finding it, are a very decided gain to clearness.

Next there is Classification. The data of insanity are such that the classes are many, but the classifications few. The hope of logical classification is not great when books attempt to satisfy three or four *principia divisionis* at one and the same time. Thus Melancholia is marked off by its chief mental symptom; General Paralysis and Epilepsy by their chief physical symptoms; and the insanities of early, middle and advanced life, by the accidents of development. Delirium of fevers, again, and the insanities of injury or intoxication, where the symptoms are melancholic or maniacal or paralytic, are thrown into classes by themselves. States of mental depression, to include the melancholias; mental exaltation, to include the manias; and mental enfeeblement, to include the dementias,—are a certain improvement. But even in so simple a matter cross-division dogs the alienist. For "depression," meaning the presence of intense emotions of depression, is not the mere negative of "exaltation," which applies more to the increased rate of mental processes generally; and to emphasise the confusion, "enfeeblement" is a common sequel of melancholia and mania, and, indeed, on any fair consideration of "mental," does not exclude these states at all (Lewis, p. 163). Epilepsy, again, once the name of a disease, has, since Dr. Hughlings-Jackson taught us how to study it, become the symptom of many diseases; but it has still to find its relationships. These Mr. Lewis does indicate in

associating the epileptic insanities with the "fulminating psychoses," and he gives the material for complete scientific co-ordination; but there still needs some re-setting of the facts. Now for clinical convenience these cross-divisions are of little consequence; for one person always excludes another and the practical alienist deals with persons. But even the best clinical classifications are little better than artificial diagnostic tables for beginners. For the ends of science they are, as a rule, mere confusion. And the confusion arises largely from two causes: first, the practical necessity for separating the insanities from related diseases; second, the failure to apply, rigorously and in detail, the thorough-going concomitance of mind and body. The first has kept in obscurity the qualitative identity of the insanities with other diseases, an identity that Mr. Mercier and Mr. Lewis in their analyses of intoxication, senile dementia and coma, have done much to elucidate. The second, preserving a vague tradition of the "possession"-psychology, has retarded the application of strict analysis to the seeming lawless fantasies of the insane, and the insanities, consequently, have been classified less by their essence than by their accidents.

Lastly there is Method. Insanity has still many ill-understood facts; but it is the business of the scientific alienist to push the insanities towards the deductive stage, and this Mr. Mercier does: assuming the correlation of mind and body, proving inductively heredity and stress, he exhibits the insanities as the result of heredity and stress on the highest nervous mechanism. For the practical alienist the physical will assume the most importance; for the psychologist there is only one method. Nothing comes under insanity that is not in some relation mental, and nothing that is mental is unaccompanied by nervous process. The true method, therefore, is to analyse the mental, to analyse the physical, and then to correlate the two analyses. The two are everywhere co-ordinate. This method, explicitly or implicitly, is the method of Mr. Mercier and Mr. Lewis.

2. *Psychological.* In the minor forms of mental disorder, Dr. Maudsley, Mr. Sully, Prof. Ribot, and the hypnotists of every school, have indicated how much there is for psychology to overtake; how much the morbid illumines and verifies the healthy, and what wealth yet lies unworked in the great wilderness of the insanities. It is, indeed, a marvel that alienists, having to hand so vast a supply of material, have yet, on the whole, so little subjected the subtleties of the insane to direct analysis. In this regard the two books before us are a contrast to the general. Subjective study, it is true, is not easy in the abnormal mind; and yet asylum-records give copious material for it. Objective study, therefore—that is, critical inference of mental states from objective processes—is essential; and for this the material is unlimited. Any ordinary text-book gives clinical cases by the score—states of depression, of exaltation, of every variety and

grade of decaying faculty ; but, unfortunately, there is more of diagnosis, of the object-matter of delusions, of indications for treatment, than of critical co-ordination or systematic generalising of mental phenomena. The requirements of a psychological record of the insane are obvious : a pathology of nervous processes, which Mr. Lewis goes far to supply and define ; a history of sense-disturbances ; a history of delusions in every variety ;—and all ‘done into science’ by the detailed application of a systematic psychology. Towards this, the two books—Mr. Lewis’s in particular—are a material help. The detailed analyses of delusional states, the records of reaction times, the minute study of *auræ*, and the like, are just such as the psychologist wants. Studied thus—that is, scientifically—insanity becomes fruitful in two ways : as a field rich in new material, and as a method of analysis. To exhibit this, I select one or two examples.

Mr. Lewis has many examples of detailed analysis ; but perhaps the most impressive is his analysis of the mental state in Melancholia. In every state of depression there is a failure in object-consciousness (negative affection), accompanied by a rise in subject-consciousness (positive affection). The decline of object-consciousness shows itself in enfeebled representativeness, lessened seriality of thought (defective attention), diminution or failure of the muscular element of thought. With failure in the muscularity of thought goes failure to master the environment in relation, with the consequent feeling of increased effort, of restricted volition, of persistent environmental encroachment. “We fail to *grasp* the environment : we do not *know* it, in the sense of measuring our strength against it ; and hence we *fear* it” (p. 124). How from this the melancholic passes into a “truly self-analytic state” ; how personal identity fails and a double personality may arise ; how the emotional life prevails and the sense-records are falsified, and the “attempts at explanation” end in establishing a new environment, and the melancholic, now a monomaniac, passes into his newly-acquired freedom ; and how, at last, the new personality is set on a stable foundation, and the life of relation develops again on the reduced level (re-integration),—this and the following physiological analysis require more detail than a summary can give.

Here three things are noteworthy : first, the amount of fresh mental situations that occur even in an ordinary case of insanity ; second, the nervous hypotheses implied in the terms—reduced level, reductions, denudations, lowered planes and so forth ; third, how insanity, in its infinite varieties, is really an irregular analysis of the mental syntheses of life and education ; as in the decay of memory the last-acquired goes first and successive denudations end in exposing the very fundamentals of the personal life. Not less instructive is the analysis of mania, the contrasting state.

“All maniacal conditions are pre-eminently distinguished by a failure of attention, or the capacity for serial thought, and a rise of the purely

sensuous in place of the intellectual operations—in fact, the latter are enfeebled, and the emotional elements are aroused; and, as before indicated in states of *depression*, the intellectual sphere presents the negative, and the sensuous the positive results of the reduction. Since seriality of thought requires high nervous pressure—a high tide of the nervous wave to force the ultimate ramifications of the cerebral cortex—so here in mania we must recognise an ebb of this cerebral tide, corresponding to the lowered plane of psychical activity; for the activity which we recognise in the excitement of lower levels is one of disorderly un-governed license, indicative of the removal of the influence of higher controlling planes. . . . It is the more abstract representative processes of association by similarity which are first involved in maniacal reductions—the less abstract presentative-representative processes not being so far involved. This fact explains much of what we observe in the maniac's conduct: his perceptions are crude and his notion of the essential utility of objects around him is frequently at fault—the result is often comical, but at other times it is disastrous to himself and to others. Thus we may see such a subject trying to put his coat on by thrusting his legs into the sleeves, mistaking the garb for a pair of trousers; here we observe that the association by similarity suggests to his mind only imperfectly the utility of the garment." Other results due to the same cause are often put down to "sheer wilful mischief".

A comparison of this with normal states is interesting. The failure of attention means the failure of discrimination, failure to detect differences; in the rush of contiguities, therefore, fleeting, superficial similarities are abundant. In fatigue, it is often noted, as in drowsiness, in reverie and generally where attention is feeble, the mind is most open to superficial similarities, which a moment of direct attention is enough to dispel. Thus with many minds slight fatigue leads to a low order of puns—the differences are too lightly perceived to mask a similarity that is too little for an active consciousness to note. This is utterly different from the alertness of wit, where the flavour of the pun is due to the keen perception of differences. Feeble punning is really a want of wit and the attempt of the maniac to don a coat for trousers is only a feeble *motor* pun. (v. Sully: *Illusions*, p. 157.) But in the failure of attention, as in the rise of the sensuous, the fleeting delusions, the over-action on lower planes, the sense of freedom, the rapid flooding of the mental field so that the judgment fails, the unpredictable conduct (reminding one of Richter on the unpredictable variations of the feminine mind)—the "raving maniac" is a splendid model for psychological observation. As for ethics the saint is less illustrative than the sinner, so for psychology the sane is less illustrative than the insane.

Next what contributions does insanity, as here studied, make to the special problems of psychology? I take three instances—(a) the concomitance of mind and body, (b) the gradation of nerve-centres with the corresponding mental gradations, and (c) the place of the organic sensations.

(a) General considerations are enough to establish the concomitance of mind and body; but every advance in analysis,



physical and mental, is a gain to definiteness. The account of the "motor unit" (Lewis, p. 67), the refinements of distinction among cells and convolutions, the local variations of size of cell, of appearance, of connexions, of "representative" importance, this kind to minute muscles, that to the more massive, one indubitably motor, the other indubitably sensory, this group marking the greater motor areas, that the lesser—these and the exact rendering Mr. Lewis is able to offer, give some imaginable concrete basis for the enormous wealth of mental activities. And were it only for this better defining of the physical basis, Mr. Lewis's book is important; for the hypotheses of nervous changes, compounding and decomposing of molecules, variations of nervous tension, inhibitory cell-action and the like, though they are well and in their place when the mental facts require them, will gain, nevertheless, in definiteness and cogency from the better definition of the actual mechanisms involved. The assigning of functions to definite varieties of cell and fibre is not less important than the localising of the motor areas or the determination of the hierarchy of centres. And to this assigning of function and the consequent elucidation of morbid phenomena, as of impulsive insanity (p. 176), epilepsy (p. 477), senile decay (p. 487) and alcoholic insanity (p. 535-9), Mr. Lewis's researches are a great contribution. Mr. Stout has argued that nervous physiology will be of little use to psychology till our notions of nerve-energy are as definite as the atomic theory in physics, till a given state of the physical enables us to predict a given state of the mental. This ideal is yet far off; but work like Mr. Lewis's is bringing it within view. One matter, of great interest psychologically, Mr. Lewis gives more consideration to than most neurologists—*viz.*, the provision for new nervous growths (p. 108).

(b) Of the nervous hypotheses used in these two books, the gradation of centres is by far the most serviceable. This hypothesis, long familiar in its general form to the evolution-psychology, has been made more definite on the practical side by the "three-levels" of Dr. Hughlings-Jackson, who has from time to time re-stated his argument with new facts and new ingenuities of interpretation. From the study of convulsions, the hypothesis has been pushed into every field of insanity; it is Mr. Mercier's "master-key" and the denudations (understood of the cortical laminations), reductions, and lower planes, of Mr. Lewis are all parts of the same fruitful suggestion. Some such far-reaching hypothesis is essential to the continuous exposition of insanity; for, though analysis is always possible from the mental side alone, the grading of mental states is aided most materially by statement from the physical side. It is not always easy to place one set of intellectual operations on a "higher level" than another; it is much easier to assume that the physical and mental are correlated on the various levels of each and then to



state the analysis in terms of the physical. The correlation, however, has to be proved by itself ; and the work of localisation will be to find in what convolutions and what laminae of the cortex the various grades of the higher levels are placed. It is here that the pathology of the insanities will avail most.

(c) Since Professor Bain first exhibited the profound importance of the Organic Sensations, probably no department of psychology has risen more in value. What is the physical basis of the feelings of well-being or ill-being ? That was one of the first questions that the exposition of the organic feelings had to answer. And the answer has been so difficult because the organic sensations are so vague, so little localised, so difficult to formulate in words. The positive description of them is so difficult, because their contrapositive is so various ; disorder of the viscera is, as a rule, local enough, but this very individualism of disorder, which in differentiated senses is a help to analysis, masks the generality of the system disordered. From the minute study of the nervous system, however, the necessity for representation of all bodily departments in the general parliament of the nerve-centres, the urgency of finding for every mental a physical, and for every physical a mental counterpart, and lastly, the rational study of nutritional disorders in the insane, as by Mr. Mercier and Mr. Lewis, the organic feelings are beginning to out-top in importance the master-senses of touch, hearing and vision. "Elles sont les agents principaux de ce travail cérébral sourd, mystérieux, inconscient, qu'on néglige en général pour ne voir que le travail plus brillant des sens spéciaux, mais qui n'a pas moins d'importance que ce dernier au point de vue purement intellectuel et qui en a beaucoup plus au point de vue émotionnel." (H. Beaunis : *Les Sensations Internes*, p. 252.) And there is no part of psychology that the study of the insane is more likely to elucidate ; for the feelings of well-being, self-identity, personality (to use these terms in a well-understood sense) have their physical counterpart in the health and integrity of organismal processes—in the *cœnæsthesis*,—and it is precisely those subtle and pervasive feelings of well-being and the like that in insanity are always disordered. Consequently, every marked case of insanity is, as it were, an experiment on the *cœnæsthesis*. Our authors are both fully awake to this important fact. Mr. Mercier's division of nerve-circulation into major and minor is designed to show the importance of the organic feelings. "In every case of insanity the nutrition of the whole body is disordered" (p. 134). The "wretchedness" of nocturnal vigil (p. 303), the assimilation of sleep to melancholia (p. 345), the analysis of delusions of self (p. 367) are further instances to the same purpose. With Mr. Lewis, too, the organic feelings have a place of equal honour ; the references are too numerous to quote. To the methods of analysis thus indicated it is necessary to add Hypnotism. If Prof. Delbœuf's theory of the re-establishment of direct control over the nutritional

processes be accepted, and if the remarkable increase of subjective discrimination indicated by M. Beaunis (*Op. cit.*, p. 156) can be established, the organic feelings will soon be as well understood as the more isolable sensations of the five senses.

3. *Metaphysical.* A desire for superficial and seeming completeness often leads the alienist to give 'some account' of mind; which commonly means an unstrained series of opinions on spiritualism, materialism, the relations of mind and matter and the like. From this our authors are both free. Positive insanity, like positive psychology, requires certain assumptions. These, which it is not the part of insanity as such to justify, are made and the exposition proceeds. One cannot help feeling the inadequacy of Mr. Mercier's "substance-and-shadow" metaphor for mind and body; it expresses the concomitance, but scarcely the disparity. Yet who has suggested a term that does express all the peculiarities of that unique relationship? The important thing is that the substance of the exposition do nowhere contradict the primary assumption, however expressed; and with both our authors the exposition nowhere does, unless casually in a verbal way. It is probably only an apparent lapse when Mr. Lewis, classifying the conditions of "revivability of impressions," puts down "vigour of the faculty of attention" (mental) as co-ordinate with "vigour of circulation and nervous energy" (physical). Is not attention the mental side of a *local* increase of "circulation" and "nervous-energy"? But if the greater things of the thought are sound, the lesser things of expression need not affect our appreciation.

W. LESLIE MACKENZIE.

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*Elements of Logic as a Science of Propositions.* By E. E. CONSTANCE JONES. Edinburgh: T. & T. Clark. 1890. Pp. xv., 208.

This book is really a series of discussions on several logical topics, and its contents would have been much better described by the title "Notes," which Miss Jones first proposed to give it, than by *Elements of Logic*. The latter title is not justified on the ground that the volume "presents what is necessary for indicating the outlines of the science of Logic;" for to give thirty-six pages to the discussion of Existence and a Limited Universe and only four to the whole subject of Induction is not to give a fair idea of an outline of Logic—it is rather to give a sketch in which some large regions are very slightly filled in and some small ones are very minutely shaded.

As a series of notes, the volume has a character of its own. The discussion is painstaking to the last degree, and classification—of terms, of propositions, and of arguments—is carried to the farthest verge of which classification is susceptible. We

cannot help thinking that the classification is overdone (the bare Tables exhibiting the kinds of categorical propositions occupy fourteen pages) : none of it is incapable of justification, but much of it seems to us of very slight logical interest. For instance, the final division of everything is into absolute and relative (or what Miss Jones calls independent and dependent)—a division which is entirely irrelevant to common Logic. If one is going into the Logic of Relatives—if one is going on to discuss the logical equivalence of two such sentences as these, 'All patriots are lovers of all but enemies of some countries' and 'Some countries are subjects of enmity to all who are unloved by any patriot'—then it is necessary to distinguish relative from non-relative terms, and to set forth clearly all the relations that hold between the eight distinct kinds of relative term. But any combination of words *which is not to be broken up in the course of a given argument* is, for logical purposes, exactly the same thing as a simple term, whether it is expressed in one word or more than one. The suppression of this division, together with the equally irrelevant one into vernacular and specific, would alone do much to shorten Miss Jones's Tables, and hence to rob them of what must seem, to most feeble human minds, a very considerable degree of formidableness.

It is of more importance than it would seem, at first sight, to take a right view of what Logic is. Miss Jones defines it to be the Science of Propositions, or of the Import and Relations of Propositions. This is not erroneous, if one lays strong emphasis upon the word *relations*, but it is infelicitous. In defining a science, the subject-matter of which is already pretty well marked out, the thing to do is to find out what is the inmost secret of our interest in the subject-matter, and to make the definition hang upon that. In the case of Logic, the striking feature about the thing is that, as a praxis, it enables us to sit down at our study-table, to take a lot of propositions brought in to us, it may be, from very different regions of knowledge, and, by piecing them together, to produce new propositions without fresh reference to the outside world ; and that, as a theory, it enables us to study the nature of this piecing together, and to lay down its proper safe-guards. For instance, take a syllogism which, in my own experience, there has been constant occasion to lean upon. It is easy to remember that the German words *Zapfen* and *Stäbchen* mean together the rods and cones of the retina, but when it becomes necessary to know which is which, that is not so easy. I have found myself obliged, again and again, to go through with this syllogism :

From my knowledge of Grium's	From my memory of youthful games
law, I know that <i>Zapf</i> is <i>top</i> .	I know that <i>top</i> is <i>cone</i> .

By putting this and that together, I know that *Zapfen* is *cones*.

Now the essential feature of what has taken place is the *fusing*

together of two propositions, and the *emergence* of a third. It is true that this could not have taken place if the two propositions had not stood in some relation to each other, but it is not the standing in the relation which is the critical point of the mental event. In other words, Logic is properly defined as the Science of Reasoning, and not as the Science of Propositions. We do not define Architecture as the science of bricks and mortar, nor Biology as the science of the cell, though these would not be impossible definitions. The value of this observation lies in its application. Every thing that has not some bearing, more or less direct, upon the theory or the art of drawing conclusions, ought to be excluded from Logic, or at least to be treated in very fine print. Many distinctions which would be of interest in a higher kind of grammar—a psychological grammar—are not of interest in Logic. If Miss Jones's classifications could have been sifted with this principle in view, they would have stood a better chance of being accepted by logicians.

The subjects discussed at the greatest length by Miss Jones are the Import of Propositions and the Existence of Terms. The reason that so many different views are possible in regard to the Import of Propositions is a very simple one. Every term is a double-edged machine—it effects the separating out of a certain group of objects and it epitomises a certain complex of marks. From this double nature of the term, it follows with mathematical rigour that a proposition, which contains two terms must have a four-fold implication (though one of the four senses may be at any time uppermost in the mind). Whoever says, for instance, that 'All politicians are statesmen' must be prepared to maintain that the objects, politicians, are the same as some of the objects, statesmen, and are in possession of all of the qualities of statesmen; and also that the quality-complex, politician, entails the quality-complex, statesman, and is indicative of the presence of some of the objects statesmen. (In any given case, the term may be applicable to only a single object, or indicative of only a single indivisible quality, as *sun*, *blue*.) In other words, to say that *a* is *b* is to affirm that both from the objects *a* and from the qualities *a* are inferrible both objects *b* and qualities *b*. Now it is open to the logician to say that any one of these four implications is the most important or the most prominent implication of the proposition, but it is not open to him to say that less than all four of them is the complete implication. Any one of the four is a sufficient ground-work on which to work out the entire system of reasoning, and when that system has once been built up, it can be translated into any one of the others by a purely mechanical change of the words in which it has been expressed. The proposition '*ab* is non-existent' does not state that the classes *a* and *b* have nothing in common, any *more* than it states that the qualities *a* and *b* are never found in conjunction. Mill's view of the import of the proposition is the third of

these—that wherever we find certain attributes, there will be found certain other attributes, that the latter set of attributes constantly accompany the former set (*Logic*, pp. 77, 80). The common class-view is the first of these. The view that the extent of the subject and the intent of the predicate are most frequently uppermost in the mind is the view that will probably commend itself to the careful psychologist.

Miss Jones's view is that the categorical proposition affirms Identity of Denomination in Diversity of Determination, or Quantitive Identity in Qualitive Diversity. (In order to say *identity* of denomination, the predicate *b* must, of course, be first changed into 'some *b*'.) This has the merit of having reference to two of the four affirmations of a proposition, but it has the demerit that the second clause of it is not an adequate description of the qualitative relation that holds between the subject and the predicate—it is merely the condition of the proposition being significant. When we say 'All men are mortal,' the statement, in terms of quality, is not 'Being a man is-a different-thing-from being mortal'; but it is 'Being a man is-indicative of being mortal' or 'The quality man-ness is-always-attended-with the quality mortal-ness'. That this is so needs no arguing, and, in fact, Miss Jones herself sets it forth distinctly in another place. She says (p. 61)—"From every X being Y there may be inferred a connexion between Xness and Yness"; and it is plain that the connexion here referred to is not the connexion of diversity. But if it be said that the reference to quality is merely added to secure the proposition's being significant, then what remains is simply the common class-view of the import of the proposition—a view which Miss Jones apparently considers very objectionable. But she can hardly seriously maintain that the difference between the two statements

'The objects *a* are-included-among the objects *b*'

and

'The objects *a* are-identical-with-some-of the objects *b*

is anything more than a purely verbal difference. If some higher court has handed down the decree that the predicate in 'All *a* is *b*' *must* be a name not for *b* but for 'some *b*,' then it is true that 'are-identical-with' is a better form of expression for what is left of the copula; but even the assertion 'The *a*'s are identical with the *b*'s,' is not *incompatible* with 'The *a*'s are included among the *b*'s,' as Miss Jones affirms it to be (p. 53). If a lot of objects are contained in a given circle, do they cease to be contained in it when they become so numerous as to fill it completely up?

On the allied questions of Existence and a Limited Universe, Miss Jones shows a good deal of misapprehension of the position of her opponents; the force of her argument carries her so far, in fact, that she ends by accusing them of denying the Law of Contradiction, and she utters a warm defence of that law, which, she says, is a pillar of Logic, and to question which is to question the

very possibility of truth. If there are any individuals who question the Law of Contradiction, they would certainly be very interesting specimens for preservation in a psychological cabinet of curiosities.

Miss Jones, indeed, gives up the whole case, as far as the non-implication of existence in *universal* propositions is concerned, in spite of her very long argument against it, when she says plainly on p. 95 that universal propositions ought not to be taken as making any implication whatever in regard to the actual existence of their terms. This is the very thing that her opponents are contending for; it is very illogical (and it is doing great injustice to their sanity) to suppose (p. 93) that it follows from this that they force themselves to doubt the existence of every thing that they ever talk about in general terms. They simply say that it is (for certain reasons which we cannot set forth here) a *useful convention* to take 'All the *a*'s are *b*'s' as meaning, 'All the *a*'s that there are are *b*'s'; and, if it is also known that there are *a*'s, to state that as a separate proposition, 'There are *a*'s'. In regard to particular propositions, their attitude is this: it is hard to see any logical distinction between 'Some *a*'s are *b*'s' and 'There are some *a*'s that are *b*'s'; the latter plainly affirms the existence of *a*'s that are *b*'s, hence it is better to take the former also as affirming the existence of *a*'s that are *b*'s. The kind of existence that is not asserted in the one case is, in any one discussion, exactly the same kind, whatever that may be, that is asserted in the other. Or, their attitude may be expressed in this way: they humbly beg that such an argument as this—'All salamanders breathe fire; there are such things as salamanders; therefore there are things which breathe fire'—shall not be taken as an argument having no content.

Miss Jones's chief objection to De Morgan's useful idea of a limited universe is also based upon a misconception. The objection is that the universe is no sooner named than it is transcended; but the very meaning of universe is the understood container of all our terms (including their negatives), and if any thing is named it is a term and not the universe of the given discussion.

Much of Miss Jones's new nomenclature is well-chosen and worthy of adoption—notably the name *alternative proposition* for 'Either *a* is *b* or *c* is *d*,' instead of disjunctive proposition.

CHRISTINE LADD FRANKLIN.

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*The Gain of Life, and other Essays.* By WILLIAM CHATTERTON COUPLAND, D.Sc., M.A. London: T. Fisher Unwin, 1890. Pp. xii., 285.

Of the essays which compose this volume two have a philosophical interest; but we propose to confine ourselves to the



essay which gives the volume its name and more than half its bulk. It is a discussion of the question between optimism and pessimism, not in its historical aspect, but on its own merits. Dr. Coupland certainly succeeds in treating the subject in a way which will be popularly intelligible. The ordinary reader may however be puzzled by the author's metaphysics, presented as they are with incomplete evidence; and perhaps his head will turn when Dr. Coupland takes him conscientiously through all the degrees of comparison—bonism, meliorism and optimism, with their antithetic malism, pejorism and pessimism. Dr. Coupland, the translator of Von Hartmann, has the merit of being a sympathetic critic of pessimism; but his sympathy is so largely mingled with strong good sense that pessimism comes off but poorly in the end. The upshot is that neither has life a positive value, nor on the other hand is pain proved to be in excess (a view which is called Indifferentism); but that in seeking to live we obey an instinct or impulse to progress "which we trust is rational, though we cannot prove it to be so," and which is "the stirring within us of the moving spring of the Universe". Many persons turn with distaste and impatience from the subject of pessimism, but a question which interests so many people's minds cannot be disregarded, and though it is incomplete the present essay must be welcomed as an impartial and straightforward discussion.

With great dexterity Dr. Coupland begins by appealing for a hearing to the authority of Mr. Spencer who in a well-known passage of the *Data of Ethics* has said that the issue 'Is life worth living?' must be decided before we can enter on any question of ethics; and not till considerably later does he mention how Mr. Spencer has shown his sense of the value of his own dictum by devoting to the subject just six pages of his book, in which with a happy sagacity he evades the issue. Fortified by this authority and assuming that the value or worth of life must be measured by its producing more pleasure than pain, Dr. Coupland then reviews the evidence, and finds it insufficient for forming a decision. He shows how difficult it is to strike a balance in the animal world. And in human history we find a heavy debt of misery paid to Ignorance and Greed, the two sources of our ills—ignorance to which may be traced all physical or mental disease; greed, which produces war and competition. Yet history tells us only of the salient events and not of the common life, and the record is too uncertain for a conclusion. We are no better off when we turn to the individual experience, because we do not measure our pleasures and pains systematically. Nor does a consideration of the conditions of willing help us: we find that pleasure and pain alike are antecedents of action, and that besides them we act from impulse without regard to pleasure or pain. Progress is then discussed. Dr. Coupland does not expect much from socialism, though he looks forward to a large extension of co-operation. Von Hartmann's belief in a continual increase of misery is subjected to severe criticism.



Progress, the author concludes, brings no gain of proportionate happiness; it only brings a larger life. How then can we defend the continuance of life? We seek to find a value for life here, and so are debarred from a reference to the possibility of a life of our own hereafter. The answer must be transcendental, the motive for living must be cosmic. We must conceive our own life as part of the universal life of the world. Already, in a discussion of the nature of will, Dr. Coupland had stated his belief that behind the phenomenal mind there is a real Ego which is identical with the central principle of the universe. This principle, because it is known to us as power, he calls by the name of Will. In seeking to urge on the progress of the world we are bearing witness to the existence in us of the All-Spirit. This view is sufficient to answer the question which all the *-isms* in their degrees of comparison seek to settle, and to determine us in favour of the *status quo* (or the *motus quo*), filled with faith in the world-will, which we must believe to be rational and orderly on pain of rendering our knowledge unintelligible.

There are several points worth noticing in this commendably short essay, but we can only refer specially to one. While holding himself that life has no positive worth, the author makes it clear that a belief in progress does not need to be justified by showing that pleasure increases in a greater proportion than pain. Both may increase together and their proportion remain unaltered. Each enlargement of happiness, in fact, opens new fountains of tears, while it closes the old. Progress (to adapt a phrase of Mr. W. L. Courtney's) does not necessarily imply amelioration but only advance. This is the truer meliorism, on the assurance of which most sane minds are content to act.

It cannot be pretended that Dr. Coupland's final solution is satisfactory. In seeking a transcendental answer to the original question, he abandons the position from which he starts. Worth was declared to be judged by excess of pleasure over pain; and such worth he fails to discover in life. Either, then, he has given up the dogma that life is justified by its pleasure-value, or he has changed his conception of value. His conclusion is in effect that life is justified by its forming a part of the universal plan or process. The adequacy of pleasure as a criterion of value need not be discussed, but it is plain that only confusion results when a man is told that life is not worth living except it is pleasant, and then learns that he must seek to find a value in it because he trusts it forms part of a reasonable plan.

The confusion is significant, and arises from an essential defect in the theory of pessimism, and in any attempt like Dr. Coupland's to answer its question more or less from its own point of view. The practical good sense of his answer does not conceal the inadequacy of it. Dr. Coupland, like the pessimists themselves, has failed to see the real light which history, as interpreted in the theory of evolution, throws upon the problem. He does, indeed, point out that according to that theory an excess

of pleasure is the condition necessary for life to be maintained. This well-grounded generalisation is difficult to reconcile with the belief that human life has no positive worth or less than positive worth. But the theory teaches another lesson, all the more significant because it brings the authority of science to support the healthy feeling of the ordinary man that the question, 'Is life worth living?' is an idle one and the only real question is, 'What sort of life is worth living?' The fact of natural selection, if it means anything, means this, that the process of evolution itself creates value. A number of forms of life contend for primacy: the success of one means that it has value, and that the beaten forms are without value. In human affairs the life thus declared to have value is the moral life. If, then, the distinction of the valuable from the valueless is itself created by the process, how can we apply to the process a test which is only intelligible within the process? We could only ask whether life is worth living *at all*, if living could be as a fact put into competition with non-existence. But all the facts we know are facts of existence. The question, 'Of what use is life?' is indeed intelligible when it comes from a man oppressed with misery, or incapable of endurance; but with him, too, it is a protest against a particular form of life. Instead, then, of asking, 'Of what use is life?' we have to ask, 'What life is of use?' This question is answered theoretically by the theory of selection in all its departments; it is answered in practice by the effort after amelioration. When the question is thus put, we can still seek a comprehensive formula which shall discover the position of any particular form of valuable existence in the whole economy. This is the question which Dr. Coupland answers in his own way; but it is not the question of pessimism, which, to do it justice, is consistent enough, though it purchases consistency at the price of an extravagant absurdity.

Let us, however, admit that the pessimists sin in excellent company. The agnosticism which bows the head before a mysterious Unknowable, or more consistently declares that it does not know whether there may or may not be some power behind the world, is the victim of an analogous deception. The contrast of what is known and what was once unknown but gradually becomes known, is a contrast within the world of actual existence. By an illegitimate impulse, exactly like that which questions the value of life in general, because some life has no value, the mind inquires whether behind all the world of possible knowledge there is not something else which transcends knowledge. To set up a mysterious possibility may testify to the modesty of the human intellect, or even serve as a convenient substitute for religion. But the difficulty is the wilful creation of the mind itself. In the facts and not beyond them must be sought the answer alike to the question what function the human life performs, and to the question what is the moving principle of existence.

S. ALEXANDER.

### VIII.—NEW BOOKS.

[These Notes (by various hands) do not exclude Critical Notices later on.]

*The Golden Bough*: A Study in Comparative Religion. By J. G. FRAZER, M.A., Fellow of Trinity College, Cambridge. 2 vols. London: Macmillan & Co., 1890. Pp. xiii., 409; ii., 407.

These remarkable (and very handsome) volumes deal with a special question that has laid hold of the author in the course of an extended general inquiry into primitive superstition and religion. The question is of the rule of priestly succession at the wooded sanctuary of Diana by the Lake of Nemi (Aricia), on the Alban Hills. A runaway slave, the priest gained his post only by slaying his predecessor, after first plucking a bough, called golden, from the sacred tree of the grove. Without parallel in the historic times of classical antiquity, the strange usage remained in force down to the days of the empire. Mr. Frazer seeks to shed light upon it from every possible quarter—classical legend, customs of savagery, past and present, or of extinct civilisations, and notably (after the late W. Mannhardt) the still existing superstitions of peasant folk. With reference as well to the killing as to the bough-plucking, he is led into much general consideration of primitive animism; the main outcome of which is to magnify the import of tree- (or plant-) worship for early religion, and, indeed, to make out this to have consisted of nothing, or little, else. That he has sometimes exaggerated, he is himself inclined to suspect; but the forcing of the argument, *e.g.*, in the interpretation of particular myths, classical or other, may still not be without its use in insuring sufficient recognition for this element in the beginnings of religion. In view of all the multitudinous evidence brought to bear, the killing of the successive priests is explained as a survival of the primitive idea that the spirit of vegetation, incarnated for the time in each, could only thus be preserved in full freshness and vigour. The golden bough is identified with the evergreen mistletoe, taken as embodying the life or spirit of the sacred oak more especially during its winter-sleep; and the plucking by the aspirant to the priestly office has thus a significance obviously contributing to that of the decisive killing. Detailed statement of the chains of evidence involved is not here attempted, much less any critical estimate of them; but perusal of the "Study" leaves the impression of its being a model of its kind—and the kind one which has now become eminently suited to advance the objective science of human nature. Its record of human perversities of dawning judgment, so many of them fiercely cruel in their effects, may leave the reader also with curious thoughts of the painful paths along which man has had slowly to stumble upward from his former estate.

*An Introduction to the History of the Science of Politics.* By Sir FREDERICK POLLOCK, Bart., Corpus Christi Professor of Jurisprudence, University of Oxford, &c. London: Macmillan & Co., 1890. Pp. 128.

An essay, originally delivered as lectures at the Royal Institution in 1882, printed shortly afterwards in the *Fortnightly Review*, and now given in collective form (with some revision); American readers having, in the meantime, entered into possession of the author's instruction, by the appropriative energy of some publisher in that land of the free.

Some exception could be taken to the author's scheme of "Science or Philosophy" on p. 4, even for the limited purpose of the lectures; but, once he is under weigh, the strong human interest of his treatment is well maintained to the close. Four divisions are made—of "The Beginnings of Political Science" (chiefly in Aristotle); "The Middle Ages and the Renaissance" (made to cover Hobbes); "The Eighteenth Century and the Social Contract" (from Locke to the protesting Burke); "Modern Theories of Sovereignty and Legislation" (from Bentham on).

*An Introduction to Social Philosophy.* By JOHN S. MACKENZIE, M.A., Glas., B.A., Cantab., Scholar of Trinity College, Cambridge, and Assistant Lecturer in Philosophy at the Owen's College, Manchester; formerly examiner in Philosophy in the University of Glasgow. Glasgow: James MacLehose & Sons. Pp. xi. 390.

This volume contains the substance of the Shaw Fellowship Lectures delivered at the University of Edinburgh in January, 1889. It is an attempt to apply philosophical principles to the treatment of social questions, and is divided into seven chapters. Ch. i. on "The Scope of Social Philosophy" contains a discussion of the place of social philosophy among other studies; the relations, in particular, to Ethics, Politics, and Economics are defined. Ch. ii. is on "The Social Problem," and contains a statement of those social questions to which it is at the present time most important that philosophical principles should be applied. Ch. iii. is on "The Social Organism," being a discussion of the sense in which it can be truly maintained that society is an organic whole. In ch. iv., which is on "The Social Aim," various possible views of the ultimate aim of social life are considered, and an attempt is made to define the aim with reference to the organic view of society. Ch. v. is on "The Social Ideal," to which the aim defined in the preceding chapter naturally leads; various one-sided ideals are criticised. In ch. vi., which is on "The Elements of Social Progress," the nature of the ideal is worked out more in detail, with special reference to the problems suggested in ch. ii. Ch. vii. contains a "Summary and Conclusion". The general philosophical point of view is that of the Post-Kantian Idealism.

- (1) *General Metaphysics.* By JOHN RICKABY, S.J. (2) *Psychology.* By MICHAEL MAHER, S.J. ("Manuals of Catholic Philosophy.") London: Longmans, Green & Co., 1890. Pp. xi, 398; xvi, 569.

Former Manuals of this Series have been noticed at greater or less length in MIND xiv., 140, 271, 290, and 425. Both of the present volumes are specially marked by the effort to bring the Scholastic tradition into relation with modern thought and research. As to the upholding of the tradition there is of course no mistake; modern thought being viewed in a general way as "the adversary" or "the enemy". This view finds expression, with definite special application, at the opening of bk. ii. of Father Rickaby's *General Metaphysics*. "The opponents whom we shall seek to encounter will be mainly our English Empiricists, because they represent the most natural aberrations of British intellect; whereas other aberrations are of an imported character, being borrowed especially from Hegel". At the same time the disposition to make every concession that can be made without damage to the Scholastic structure is equally evident. "To represent the Scholastics of the present time as men all ignorant of experimental science would be as inaccurate as to represent them as all clinging, without abatement, to the old multiplicity of essential forms in all their

abundance. One point on which they are unanimous is, that the soul is not indeed the body, but the essential form of the human body; few would deny a similar office to a vital principle in the mere animals: very many affirm the like for vegetable life: and below this point the dissidents begin to multiply." Again, it is frequently and emphatically pointed out that by the Aristotelian Scholastics at least "essences are not supposed to be known *a priori* and to lead deductively to physical science, but they are inferred *a posteriori*". On the other hand, science will never be able to dispense with the term "essence". "No Physics without Metaphysics." The method of "General Metaphysics" as here set forth is to proceed downwards from Being as quite undetermined or "transcendental" to Being as determined by highly general characters. Being (*Ens Essentiae*) is defined as an *existibile*, or "that which does or may exist, whether it exist or not"; existence being "the actuality of an essence". After Essence and Existence have been defined, the three Attributes of Being, namely, Unity, Truth and Goodness, have to be demonstrated. Next, Being is considered in its determinations as actual and possible, necessary and contingent, infinite and finite. This concludes bk. i. (pp. 1-220). Bk. ii. (pp. 221-385) deals with determinations of Being borrowed from the Aristotelian categories, considering it as substantial and accidental, as active in opposition to passive, as relative in opposition to absolute, as spatial and temporal. Substance and Causality are dealt with in an interesting way; an attempt being made to show that the conception of substance as *substratum* is not necessary to scholasticism; that it is sufficient for the Scholastic to be allowed to define it as "a Being existing *per se*". Thus defined, even Hume—whose "vagaries on the question of substance" have to be disposed of—is found to allow it occasionally, as for example when he says in express terms that he believes in the existence of substance as that which exists by itself, though he does go on to apply this to "perceptions".

The influence of modern work on the Neo-Scholastic Psychology, as might be expected, goes deeper than its influence on the Metaphysics; though the structure is in appearance maintained intact in both volumes. Father Maher's joining of old with new in his *Psychology* is very skilful; and sometimes the highly systematised character of the Scholastic doctrine gives him a certain advantage in face of modern psychological classifications with their more tentative character. The author is often able to go to a considerable length in the assimilation of modern ideas. "As all mental processes," he says at p. 15, "even the most purely spiritual acts of intellect and volition, are probably accompanied or conditioned by cerebral changes, too much labour cannot be devoted to the study of the constitution, structure and working of the organism." This, however, is somewhat qualified, if it is not quite contradicted, in another passage. "By describing the activity of intellect as spiritual or inorganic, the Scholastics implied that it is a function of the mind alone; that unlike sentiency it is not exerted by means of any organ. It seems to us incontestable that when properly understood this is the true doctrine" (p. 245). Perhaps formal contradiction is escaped when it is said that the intellectual activity of the "supra-organic or spiritual faculty" "depends *extrinsically* or *per accidens* on the organic faculties"; that "intellectual cognition always involves *self-action* on the part of the mind, but the conditions of such self-action are posited by impressions in the inferior recipient faculties" (pp. 247, 248). The Faculty-doctrine is, of course, maintained without wavering; the scheme adopted by the author being the "double division of faculties, on the one hand, into

sensuous and rational, and on the other into cognitive and appetitive". The phenomena of feeling (pleasure and pain) are not to be assigned to a special faculty, but are "reducible either to aspects of cognitive energies or modes of appetency". Rejection of the modern tripartite division of mind is a note of Scholasticism. "Natural Dualism" is of course upheld; but the author seems disposed to adopt rather the form of it that makes perception of the body come first, and then perception of the external world; this last arising only in consequence of associations and mediate inferences. The divisions of the work are:—"Introduction" (pp. 1-40): Book i. "Empirical or Phenomenal Psychology" (pp. 41-437); Book ii. "Rational Psychology" (pp. 439-545), to which is appended a Supplementary Chapter on "Animal Psychology" (pp. 546-558). Under "Empirical Psychology," first "Sensuous Life" is dealt with (pt. i., pp. 41-230), and then "Rational Life" (pt. ii., pp. 231-437). Association, of which a pretty full account is given in connexion with Memory, comes wholly within the first part (c. x., pp. 181-215). The faculties from which the two kinds of life—the sensual and the rational—proceed, are "two classes of faculties of essentially distinct grades". Sense apprehends the "suchness," the phenomenal qualities, but not the *being*, the "isness" of things. To cognise Being the intellectual faculty, the Rational or Spiritual activity of the mind, is required. Empirical Psychology is incomplete without Rational Psychology, which is strictly a philosophical science; its aim being to demonstrate the simplicity, spirituality, &c., of the soul. In bk. ii., accordingly, recent theories concerning the soul, especially the "double-aspect" theory with its opposition to the Scholastic dualism, are dealt with. There is a slip when it is said that the school which, in one form or another, defends this theory, "is at least unanimous—however illogical—in teaching that bodily states, at all events, determine changes in our mental states" (p. 471); but this is exceptional. The historical and controversial parts all through the volume are in general very careful and well managed. In the "Rational Psychology" the old garment becomes more conspicuous than in the other division, and the new cloth correspondingly less so; but even here there is an effort to assimilate as well as to controvert modern ideas. A serious attempt is made, for example, to show how the doctrine of an evolution of man's physical organism from that of a mere animal may be held consistently with the Catholic doctrine of the soul. In a chapter on Cerebral Localisation (which comes within Book ii.) and in the supplement on Animal Psychology, there is some incisive criticism on the want of conclusiveness in many of the results of modern research.

*Induction and Deduction: A Historical and Critical Sketch of successive philosophical conceptions respecting the relations between Inductive and Deductive Thought. And other Essays.* By CONSTANCE C. W. NADEN. Edited by R. LEWINS, M.D. London: Bickers and Son, 1890. Pp. xxv., 202.

The author of these essays died in 1888, aged 30, at the beginning of what promised to be a career of much eager activity, practical as well as intellectual. She had a poetic gift which has not failed of recognition, and, having had her mind turned also to philosophy while she was yet a girl, engaged afterwards in various studies, scientific and other. Her chief essay (pp. 1-100), giving name to this volume, was written (at the age of 29) for a college-prize at Birmingham. It displays, with superior powers of expression, a good understanding of the essential implication of Induction and Deduction with one another. On the historical side, it



is weak; with no sufficient continuity in the development, and the information at many points only elementary. The author appears to more advantage in one or two other of the essays, as a sympathetic yet withal independent critic of Mr. Spencer's ethical and sociological views. The chief philosophical stimulus came to her from Dr. R. Lewins, who issues the memorial volume. From him she accepted, under the name of "Hylo-Idealism," a doctrine that seeks to combine a thoroughgoing Protagorean subjectivism, amounting to solipsism, with a dogmatic materialism; and she was prepared to follow him, at least some way, in the use of a peculiar terminology (with words like "asself," "autosism," &c.) which he appears to find needful. Two of the shorter papers expound something of this Hylo-Idealism, with more warmth than illumination.

*Hypnotism.* By ALBERT MOLL (of Berlin). ("The Contemporary Science Series.") London: Walter Scott, 1890. Pp. xii., 410.

This is a translation of a second and enlarged edition of a German book which made its first appearance last year. It is very rarely that it does not read as if it had been written in English—a fortunate effect of the unnamed translator's work which is doubtless in no small measure due to a simplicity (in general) of style very refreshing to come across in a German author. In point of matter, there is no less occasion for favourable judgment. The two main chapters, "The Symptoms of Hypnosis" (pp. 53-191) and "The Theory of Hypnotism" (pp. 218-72), give (the one) more comprehensive information and (the other) a more carefully and soberly thought-out view of the perplexing subject than can easily be met with elsewhere. Special recognition should also be made of the good sense that marks the author's treatment of "The Medical Aspects of Hypnotism" (pp. 290-333). Besides some helpful recommendation of other books, there are two excellent Indexes of Contents and Names, the latter giving, with many significant dates, a remarkably full list of those who have contributed early or late to the advance of hypnotic science. Altogether, the book is one to be commended to the psychological reader.

*The Psychology of the Belief in Objective Existence.* Part i. "Objectiva capable of Presentation." By JULIUS PIKLER, Doctor of Political Sciences, Lecturer on Philosophy of Law in the Royal University of Budapest, &c. London: Williams and Norgate, 1890. Pp. 118.

This essay, written by a Hungarian author in English as well as worked out upon the traditional lines of English psychology, has for postscript the Discussion-note which appeared in the last No. of MIND, challenging the reply now made to it above, p. 545, by Mr. Stout. The essay itself, quite apart from the circumstances of interest attaching to its authorship, is no common piece of work, and will here receive the more detailed notice which it deserves. For the present it is broken off with promise of a Second Part, in which similar account will be given of the various classes of "Objectiva incapable of Presentation".

*A Protest against Agnosticism.* The Rationale or Philosophy of Belief. By P. F. FITZGERALD. London: Kegan Paul, Trench, Trübner & Co., 1890. Pp. viii., 155.

The present volume, while it is somewhat more condensed and orderly in exposition than the author's *Treatise on the Principle of Sufficient Reason* (see MIND xii. 614), is similarly illustrated by the results



of very varied reading. Beneath the profusion of philosophical and poetical quotations there is a distinctive vein of thought. The ideas with which the author is preoccupied are, as before, the notion of the possibility of attaining, logically as well as mystically, a knowledge of absolute Being, and at the same time the conviction that distinctions of personality are of permanent significance. The reconciliation is found in the idea thus expressed: "It is wholeness of Being *through union with its counterpartal soul* for which each human spirit, even though it may be unconsciously, yearns. This is the lesson of reflective reason".

*The Colours of Animals, their Meaning and Use, especially considered in the case of Insects.* By EDWARD BAGNALL POULTON, M.A., F.R.S., &c. With Chromo-lithographic Frontispiece and Sixty-six Figures in Text. ("International Scientific Series," vol. lxxviii.) London: Kegan Paul, Trench, Trübner & Co., 1890. Pp. xv., 360.

Mr. Poulton has here given a very interesting account of the phenomena of colour in animals. His method has been, not to attempt even a general description of all the phenomena—which, of course, would not have been possible within the limits—but to illustrate principles by examples, chosen especially from Insects, and more particularly from the single order, Lepidoptera; the material having been provided to a very considerable extent by his own researches. The greater part of the book seeks to explain Protective and Aggressive Resemblance, Warning Colours, Mimicry, and the related facts, by the accepted principles of Natural Selection. In this part, it may be noted, as a point of psychological interest, that insect-eating animals (such as lizards) are found to "learn by experience". The most controversial chapters of the book—and, at the same time, those that come most within the province of the psychologist—are chaps. xv. and xvi. ("Colours Produced by Courtship," "Other Theories of Sexual Colouring"). Here Mr. Poulton appears as a very strong supporter of Darwin's view as to the existence, among higher animals, of Sexual Selection, or "female preference based on æsthetic considerations". This last point, it may be noted, is really the controverted point. Mr. Wallace, for example, admits a kind of "sexual selection," but a selection of the male for his greater "activity," or "surplus vitality," or some such non-æsthetic reason; beauty in animals (and plants) being, frequently at any rate, a result simply of organic laws of growth. Thus, without the admission of æsthetically determined sexual selection, it would be quite possible to accept Mr. Poulton's view that "the tendency towards the development of higher forms of beauty is rigorously kept in check by natural selection. Remove the check or render it less exacting, and the tendency at once manifests itself." The decisive question is, whether there are sufficient positive grounds for supposing a strictly æsthetic selection. Some of Mr. Poulton's arguments rest on a rather unquestioning anthropomorphism; as, for example, when he speaks of "an insect's sense of what is *beautiful*," or when he contends that "our standards of beauty have been largely created for us by insects"; though, of course, we may find in the end that this is the only possible way of putting it. Is there any method by which it can be shown experimentally that, in some particular instances, the cause of the sexual selection that must be admitted to take place can be nothing short of æsthetic preference?

*Counsels and Maxims*: being the Second Part of ARTHUR SCHOPENHAUER'S *Aphorismen zur Lebensweisheit*. Translated by T. BAILEY SAUNDERS, M.A. London: Swan Sonnenschein & Co., 1890. Pp. 162.

For convenience of publication, Mr. Saunders has divided his transla-

tion of Schopenhauer's *Aphorismen zur Lebensweisheit* into two parts. The first part, entitled *The Wisdom of Life*, was noted in MIND, No. 59, p. 421. In the present volume, with its new title, a new series of chapters has been begun, "for the sake of appearances," though there is no such division in the original. The merits of the translation are sustained to the end.

*On Sameness and Identity.* A Psychological Study: Being a contribution to the foundations of a Theory of Knowledge. By GEORGE STUART FULLERTON. Philadelphia: University of Pennsylvania Press. Pp. 156.

Prof. Fullerton has once before set himself the task of clearing up a difficult fundamental conception of philosophy (see MIND xii. 468). The problem of infinity, dealt with in his former essay, reappears at the end of the present monograph; the question dealt with in the penultimate section being that of infinite divisibility, which is solved in accordance with Berkeleyan principles. Realism (in its modern sense) is discussed in the section immediately preceding, and is dismissed as involving confusions of different meanings of the word "sameness". As may be seen from the nature of these final disquisitions, the metaphysical bearings of the abstract discriminations between senses of the term are not forgotten. The discriminations themselves are very careful; seven senses of the word "sameness" being distinguished. Following upon the definitions of these senses, there are sections containing the application of them to "self" and "not-self," whether regarded as phenomenal or noumenal. Part i. (pp. 5-66), containing the abstract discussion of "The Kinds of Sameness," is followed by an "Historical and Critical" part ii. (pp. 67-153), dealing with the senses of the term as employed in philosophical arguments from Heraclitus to the present time. The author does not propose any rigid limitation of the term "sameness" in philosophy to one particular sense. "The word," he would rather conclude, "has many meanings, and we can hardly say that any one of them is illegitimate. It is merely illegitimate to confound them." "Identity" he looks upon as a kind of limiting conception. The common notion which unites all the kinds of sameness is the notion of similarity. When the dissimilar elements have diminished to zero, then there is "identity". The word is somewhat loosely used, but it may be stated generally that "men use the word identity to mark certain kinds of sameness in which there is little or no consciousness of duality, and they are not inclined to use it to mark sameness in which things are recognised as similar but clearly distinct". The discussion of the sameness of the formal elements in consciousness (sec. 17) may be specially noted. The result is that if two successive occurrences of a material element—say, a colour-sensation—are only similar and not numerically the same, this is also the case with two successive occurrences of a formal element—say, "the consciousness of triangularity". "To say that the formal element is not a thing, but an activity, does not alter the position. If an activity is enough of a thing to be talked about and distinguished from other things, we may surely recognise an activity in consciousness yesterday as numerically different from an activity in consciousness to-day." [The author desires that the words "be recognised as resembling" be substituted for "resemble" on p. 12, line 13, and p. 49, line 30; and "second" for "fourth" on p. 68, line 24.]

*Etude sur François Bacon suivie du Rapport à l'Académie des Sciences Morales et Politiques sur le Concours ouvert pour le Prix Bordin.*

Par J. BARTHÉLEMY ST. HILAIRE, Membre de l'Institut, Sénateur.  
Paris : F. Alcan, 1890. Pp. vii., 203.

M. Barthélemy St. Hilaire's study of Bacon extends over pp. 1-109. The rest of the volume contains his report on the four memoirs sent in for the Bordin prize offered by the Academy of Moral and Political Sciences. In the study, perhaps greater stress is laid on Bacon's defects as a thinker than on his merits; but almost always the right view seems to be taken as to what is the nature of his merits and defects. His literary style, the author allows, cannot be overpraised. "The true glory of Bacon" is rightly assigned in his own phrase, when he describes himself as the "trumpeter" of the experimental method. He did not discover the method; nor was he the first to formulate the process of induction, this having been done by Aristotle. Metaphysics he on the one side sacrificed to theology, on the other side subordinated to science. He failed therefore to attain to the philosophical position of Aristotle, whom he cast aside. "In recommending the experimental method with so much constancy and energetic conviction, he certainly propagated it; he caused its utility to be better appreciated by those who were employing it without sufficiently reflecting on it. But that is not precisely a scientific influence" (p. 152). So far as real originality of scientific thought is concerned, he was surpassed by his predecessor and namesake Roger Bacon.

*Métaphysique et Psychologie.* Par TH. FLOURNOY, Docteur en Médecine, Privat-docent de Philosophie à l'Université de Genève. Genève: H. Georg, 1890. Pp. vii., 135.

A very good statement of the parallelism of mental and physiological processes from the scientific point of view; the author's aim being to distinguish clearly the psychophysical position of the experimental psychologist from every metaphysical doctrine as to the relation between mind and body. He first shows how the "principle of parallelism or concomitance" has now become a "constitutive axiom" of physiological psychology; and then proceeds to explain how he finds it possible to make reserves in favour even of metaphysical free-will (for example) without giving up the principle as a postulate of all strictly scientific investigation. Personally he inclines to a doctrine which he describes as "agnostic Moralism" and places on the ground of Kant's distinction between phenomenal determination and noumenal freedom; but what he is chiefly anxious to show is the possibility and necessity of setting physiological psychology free from all metaphysical implications. Psychology as a positive science must follow the example of other sciences by ignoring the philosophic difficulties at its base. It must make no attempt to explain *why* mental and physical phenomena are concomitant, but must simply accept them as being so. The two sets of phenomena being irreducible for science, a scientific "principle of dualism or heterogeneity" is to be recognised beside the principle of parallelism or concomitance. While it affirms that all psychical processes are accompanied by some physical process, the axiom of concomitance does not affirm that, conversely, all physical processes are accompanied by some internal psychical process. This may or may not be so, but it is a metaphysical completion of the scientific doctrine, and, as such, positive psychology has no interest in it. If psychology, to become a positive science, must become as far as possible physiological, physiology, on the other side, is in no way bound to become psychological. Its progress, on the contrary, consists in more and more complete explanation of its special facts by the objective sciences that precede it.

*Psychologie de l'Apperception et Recherches expérimentales sur l'Attention: Essai de Psychologie physiologique.* Par GEORGES DWELSHAUVERS, Docteur en Philosophie et Lettres. Bruxelles: E. Guyot, 1890. Pp. xi., 179.

This essay submitted as a "thèse d'agrégation" to the faculty of philosophy and letters in the University of Brussels has a double interest. First, in point of content. Besides recording at length (pp. 61-104) a protracted series of original experiments on the effect which a warning signal, at different intervals, has upon the reaction called forth by a definite stimulus, it affords a comprehensive view of the work that has been done, especially by or under the lead of Prof. Wundt, towards a psychophysical theory of Attention. It was at Leipzig that the author, last year, made his experiments, and the report of them is concurrently given in the latest No. of the *Phil. Studien* (see below, p. 587). Though they were cut short prematurely, Prof. Wundt considers them, so far as they go, of substantial value; and more eager acceptance of the experimental method in psychology there could not be than is proclaimed (and justified) through all the rest of the essay. The other interest attaching to the thesis arises from its rejection by the Brussels faculty, at the instance of Prof. Tiberghien, who for so many years has upheld the standard of philosophic rationalism (in the spirit of Krause). The author's enthusiastic advocacy of the newer psychological methods and hopefulness of philosophical reform to come from them have thrown the aged thinker into consternation. Having joined in sending the young Belgian student to Leipzig for instruction in the experimental method, he now starts back in horror at the revolutionary aspirations disclosed by the ardent neophyte. How, he asks in accents of mournful reproach, how can he go on defending, in his academic chair, the cause of human liberty against the clerical party, if "Reason," which nerves his arm, is henceforth, within the walls of the free Brussels University, to be spoken of as subordinate to "Experience"? It is, altogether, a very curious little correspondence that is here printed as Appendix to the essay—curious because the "liberal" Brussels professor would use against the Catholic party precisely the same weapon which, everywhere else (and doubtless also in Brussels itself), that party likes to brandish in the face of those whom it considers its philosophic foes. For the rest, it strikes one as a little surprising that only now upon this occasion such an academic declaration should be launched in the country which Prof. Delboenf of Liège (no weak-kneed "liberal") has for so long kept well to the front of the psychophysical movement.

ICILIO VANNI, Professore ordinario di Filosofia del Diritto nella R. Università di Parma. *Il Problema della Filosofia del Diritto nella Filosofia, nella Scienza e nella Vita ai Tempi nostri.* Verona: Donato Tedeschi e Figlio, 1890. Pp. 83.

The author has already set forth in outline the reasons for giving Sociology a place among the sciences (see *MIND* xiv. 298). He now proceeds to inquire whether the existence of a Philosophy of Law is compatible with the definite constitution of sociology and with the principles of positive or scientific philosophy generally. His conclusion is that in spite of the tendency of an ill-understood Naturalism to deny that there can be any properly philosophical treatment—going beyond the scientific treatment—of social facts, the philosophy of law, as of other departments of social life, must retain its place among the philosophies of the practical arts as conceived by Mill. In virtue of its "critical" function, philosophy has to examine

the first principles of all sciences, whether natural or social, and the ends of all practical arts. Again, the conception of philosophy as universal "synthesis" requires that every special science having social phenomena for its subject-matter should be brought under the conception according to which all the elements of social life are viewed as factors of a general human evolution.

*Tonpsychologie.* VON CARL STUMPF, Professor der Philosophie an der Universität zu München. Zweiter Band. Leipzig: S. Hirzel, 1890. Pp. xii., 582.

Prof. Stumpf (who has in the interval passed from Prague to Munich) here continues the very important work which he began in 1883; see *MIND* ix., 161, 593. Occupied in his first volume with the judgment of successive tones, he does not in the second get beyond our consciousness of simultaneous tones, apart from any question of properly musical apprehension. This is still deferred to a third and a fourth volume, to follow as soon as he may be able to compass them—but not, he thinks, very soon—in the midst of his general philosophical duty. If he may thus seem to have bestowed an excessive amount of time and space upon the bare material elements of music, it is not to be forgotten that his subject is Tone-psychology, as a whole, and that he makes this the occasion for enlarging upon questions of general psychological principle. This he did to excellent purpose and effect in his previous volume, and the same procedure is now maintained. The two volumes, having together a certain completeness by themselves, are here by a happy thought provided with a good Index. Critical Notice (of the new volume) will follow.

*Geschichte der Sprachwissenschaft bei den Griechen und Römern mit besonderer Rücksicht auf die Logik.* VON DR. H. STEINTHAL, a.o. Professor für allgemeine Sprachwissenschaft an der Universität zu Berlin. Zweite vermehrte und verbesserte Auflage. Erster Teil. Berlin: F. Dümmler, 1890. Pp. xvi., 374.

Here Dr. Steinthal publishes pt. i. of a second edition of his *History of the Science of Language among the Greeks and Romans*, first published in 1863. The alterations, though affecting this part to some extent, are, he tells us, not so extensive as in the second part now in the press. In the first edition the work appeared in a single volume. It is now divided so that the contents of the first volume belong essentially to logic, those of the second to empirical grammar. This is in accordance with the historical circumstance, dwelt on by the author, that the dialectical investigation of speech by the Greek philosophers preceded the elaboration of a "true grammar" by the philologists of Alexandria. The Introduction (pp. 1-40) describes the germs of grammar in those peoples that can be said to have arrived at any grammatical consciousness. Only two—the Indians and the Greeks—of themselves and without external stimulus developed anything amounting to a real grammar; the Indian grammarians having been, as the author seeks to show, in the most favourable position for grammatical analysis. In the rest of the volume, Plato, Aristotle, and the Stoics (with whom the dialectical analysis of language in antiquity is regarded as having reached its termination) are dealt with.

*Sittliches Sein und Sittliches Werden.* Grundlinien eines Systems der Ethik. VON THEOBALD ZIEGLER. Zweite unveränderte Auflage. Strassburg: Karl J. Trübner, 1890. Pp. ix., 151.

Five Lectures ("Problem and Method of Ethics.—Historical Survey," "The Origin of Morality," "The Nature of Morality," "Duty and Virtue," "Goods and Highest Good"), now published with additions and remarks, and indexes of names and subjects. The author begins by showing that ethics has not to create morality; it is first a descriptive science. Under the rule of custom men had long practised morality before they began to theorise upon it. Description of actual good conduct has to be followed in the second place by statement of its grounds. Since conflicts arise between rival social authorities, ethical science has next to become "critical". Its most important problem is to find a criterion of action. Finally, it cannot avoid becoming "speculative-metaphysical". Besides conflict of authorities, there is an opposition between authority generally and freedom—between the social customs in which morality has its origin and the conscience of the individual. This opposition also comes within the competence of ethical science. As to the criterion, the author's general results are these. "The welfare of all, as it is the rule and the principle, so also it is the end of all ethics, the highest good itself." "When I do with consciousness what objectively corresponds to the principle of welfare, then I am also subjectively a morally good man." The argument is illustrated by appropriate references to current topics of social morality.

*Ein Collegium Logicum im XVI. Jahrhundert.* Mittheilungen aus einer Handschrift der k. Universitätsbibliothek in Tübingen. Von Dr. CHRISTOPH SIGWART. Freiburg i. B.: J. C. B. Mohr (Paul Siebeck), 1890. Pp. 42.

Prof. Sigwart of Tübingen here gives representative extracts, of peculiar interest, from a transcript preserved in the university library there, of the lectures on Aristotle's *Prior Analytics* delivered 1565-7 by Jacob Schegk. Schegk had been professor of medicine at Tübingen from 1553, and being renowned as an Aristotelian expositor was further charged from 1561 with the duty of lecturing, as professor of philosophy, on the *Organon*, in place of one Mendlin (Maentlin) under whom the philosophical reputation of the university had died away. Mendlin, it appears, would not at once retire, and it was not till 1564 that Schegk's logical prelections began. Such was his reputation that they were then attended not only by students but also by several of his professorial colleagues; one of whom, the well known scholar Martin Crusius, was the note-taker or for the most part full and accurate reporter whose MS. has been preserved. The lectures in 1564, presumably, began with the earlier treatises of the *Organon*. Crusius's MS. takes up the exposition in Nov. 1565 with the *Prior Analytics*, to which Schegk devoted as many as 174 lecture-hours—117 to bk. i. and 57 to bk. ii.—spread over nearly two full years, before passing without pause to the *Posterior Analytics*. It was thus a very elaborate course of which the main part has by Crusius's exemplary diligence been preserved, and of which Prof. Sigwart has now with admirable care and all necessary elucidation given these specimens. Very curious and instructive they are in many ways. We see in Schegk a really vigorous and able teacher, master of his text; which at times he expounds word for word before digesting the doctrine into dictation-paragraphs and adding illustrations, while at other times he counts upon his hearers' being able at once to follow his free exposition of the easier passages. Nothing has ever been put in print which brings us so directly face to face with the best academic work of the closing middle age. Crusius's transcript is all the more valuable because it embodies also the occasional colloquial remarks in



German (or Latin) which the lecturer would let fall in the midst of his regular (Latin) exposition. These in general are meant the better to drive home his meaning, but sometimes they are of much human interest, as when, getting confused over a logical example at the end of an hour, Schegk breaks off: "Cras emendabo, *ich habe mich selbst geirrt da*". Another time, he has this: "Non potui praeterire haec hactenus, etiamsi jam non potuistis omnia forte intelligere; tamen, cum acceperitis mea commentaria, intelligetis. *Ich kans nit mit einem traechter eingeissen.*" And here is the epilogue to that part of the course which Crusius gives us: "Cras incipiemus ipsa posteriora Analytica. Nihil, nisi forte necesse erit, dictabo. Ideo emite vobis eorum commentaria, Tybingae [Sigwart has to correct this to Basel, as the true place of publication of Schegk's commentary on the *Post. An.*] impressa. *Sparet das gaelt ein waenig, et emite illum librum.*" Interspersed are jottings by Crusius, from which much is to be learned about the distribution of the academic sessions and the holidays that divided or interrupted them. We have also the sanitary condition of Tübingen brought before us in the fact that from 30th October, 1566 the lectures had to be given at Esslingen, on account of plague which did not permit of return to the university-seat so long as the *Prior Analytics* held out (and indeed for some weeks longer—fourteen months altogether). The (second) wife, the six-year-old "dulcissima filiola," and the aged mother of Crusius, as he tells us, all fell victims to the pest in its first weeks. Nine months afterwards the lonely professor consoled himself with a third wife at Esslingen, and over the marriage lost Schegk's lectures between 12th and 16th August, but was able to fill them in from the notes of another hearer. Prof. Sigwart's labour upon the MS. deserves very warm acknowledgment.

*Die Geschichtsphilosophie Hegel's und der Hegelianer bis auf Marx und Hartmann.* Ein kritischer Versuch von Dr. PAUL BARTH. Leipzig: O. R. Reisland, 1890. Pp. 149.

A very thorough study of the "philosophy of history" of Hegel and his successors (so far as they have adhered to Hegelian principles). Under his general title the author deals not only with the philosophy of history strictly so called, but also with the history of religion, art and philosophy. His aim is to show the error of Hartmann's remark that only the form, not the content, of the Hegelian philosophy is antiquated. His method is to bring the results of modern positive inquiry in all the fields dealt with into comparison with the deduction, by Hegel or his successors, of the course of history from the principles of 'dialectic'. A particularly full refutation (pp. 40-61) is given of the doctrine of Marx that all other social activities are determined by the economical constitution of society; the independence (in a great measure) of political, legal, religious and philosophical development being established by reference to the work of historical investigators. Marx's doctrine is found to have been determined in form by the influence of the Hegelian philosophy. Its real merit is in taking into account the reaction of economical structure on society as a whole. Its defect, due to its Hegelian origin, is in making economical factors determine everything. In content it is the opposite of Hegel's own view, which makes "the idea" omnipotent; but this is equally erroneous. The employment of the Hegelian method leads only to distortion of the facts, which always have to be introduced surreptitiously. The "secret of the Hegelian dialectic" is simply the confusion of contrary with contradictory opposition. It is only by this confusion that Hegel and his disciples can bring positive facts within their dialectical process at all. Dr. Barth's book has been written not without a view to



recent developments of Hegelianism in England and America, of which he shows full knowledge; as he does also of those modern English (as well as French and German) inquirers into the early history of institutions whose progressive results he would oppose to the illusory combinations of the Hegelians.

*Die ethische Bewegung in der Religion.* Von STANTON COIT, Ph. D. (Berlin), Sprecher der South Place Ethischen Gesellschaft in London. Vom Verfasser durchgesehene Uebersetzung von GEORG VON GIŻYCKI. Leipzig: O. R. Reisland, 1890. Pp. 227.

This translation by Prof. v. Giżycki of Dr. Coit's addresses delivered to the South Place Ethical Society reads very well in German. One may wonder, however, that the collection has not been previously published in English, as doubtless the separate addresses have been. The idea running through them all is expressed in the title—"The Ethical Movement in Religion". They are all marked by an enthusiasm for social reform, together with a belief in the supreme importance of the inner moral life both in itself and as the starting-point of everything to be done for improving the external ordering of things. Morality, conceived in this way, is not put forward as a competitor with existing religions, but as capable of alliance with them, and yet as having an independent life of its own, which is only not called "religious" because religion implies, over and above exalted ethical feeling, submission to some Power, whether external or immanent—and this is not an essential part of morality. Theoretical agreement as to the basis of ethics is to be looked forward to as a distant end, but it is not to be sought first of all. The aim for the present must be to attain practical agreement as to conduct; in the confidence that theoretical agreement will come afterwards as morality gradually penetrates all religions and displaces ideas inconsistent with devotion to ethical culture as the supreme interest of life both for the individual and for society.

*Kurzgefasste Logik u. Psychologie.* Von Dr. K. KROMAN, ord. Professor der Philosophie an der Universität zu Kopenhagen. Nach der zweiten Auflage des Originals unter Mitwirkung des Verfassers ins Deutsche übersetzt von F. BENDIXEN. Kopenhagen: J. Frimodt; Leipzig: O. R. Reisland, 1890. Pp. xii, 389.

This manual by the Danish author of *Unsere Naturerkenntnis* (see MIND ix. 160) has some exceptional qualities that call for more notice than they can receive on the present occasion. We will the more endeavour to return to it in MIND because the author's earlier work failed, through various circumstances, to get here anything like the amount of attention due to its great freshness and vigour of treatment. Fortunately, his main epistemological positions get restatement in the present (more elementary) book, which, after being favourably received in its native Denmark, is now, in effective German translation, made accessible to a far wider public. The conjunction of Logic and Psychology, in that order, is, though not without a certain reason (of which more later), still somewhat artificially made. The author, however, in both divisions pursues so independent a course and writes so suggestively that he is to be judged much more by the matter of each than upon any consideration of mere external form. Two things are noted by himself as specially significant in his psychological section—a hostile criticism, from his distinctively *scientific* point of view, of the current two-aspect theory of mind and body, and his rejection of 'Association by Similarity'. This latter is a topic to which, from different sides, also other Danish

psychologists, notably Höffding and A. Lehmann, have given special attention.

*Die Gesetze und Elemente des wissenschaftlichen Denkens.* Ein Lehrbuch der Erkenntnistheorie in Grundzügen, von Dr. G. HEYMANS, Privatdocent der Philosophie an der Universität zu Leiden. Erster Band. "Allgemeiner Theil und Theorie des mathematischen Denkens." Leiden : S. C. van Doesburgh, 1890. Pp. 270.

This is the first volume of a text-book of Theory of Knowledge and treatise on Method. It is divided into an Introduction (pp. 1-42), a General Part on Formal Logic (pp. 45-121), and a Special Part on the Mathematical Sciences; those dealt with at present being Arithmetic (pp. 125-166), Geometry (pp. 167-258) and Kinematics (pp. 259-270). Theory of Knowledge, in the author's view, is a "psychology of thought". We have to find, in the first place, what elements of knowledge are experientially given. These being found insufficient to constitute actual knowledge, we have next to determine what subjective data are added by the mind. The most convenient objects of this investigation are the sciences; scientific knowledge being more readily submitted to exact analysis and synthesis than the knowledge of common life, though this also involves the same elements. Accordingly we discover in science the "universal human" causes of certitude; and the psychological ascertainment of those causes is at the same time the justification of the elements contributed by the mind to knowledge. Dealing with formal logic, the author opposes to the "empiristic theory" of Mill and to the "geometrical theory" of Lange and others the view that "logical laws are not laws of things, but exclusively laws of thought". In his treatment of geometry, he seeks to place the Kantian attribution of geometrical knowledge to "subjective factors" on a psychological foundation by the more precise determination of those factors; here following Rieh, whose "hypothesis" that geometry is to be explained from the date of the "sense of motion" he accepts as at least "very probable".

*Der Optimismus und Pessimismus in der jüdischen Religionsphilosophie.* Eine Studie über die Behandlung der Theodicee in derselben bis auf Maimonides. Von Dr. H. GOITEIN. Berlin : Mayer & Müller, 1890. Pp. viii, 112.

A very interesting and instructive account of the treatment of the problem of evil in Jewish religion and philosophy. Dr. Goitein's "study" is divided into a first part dealing with "Theodicy in the Biblical and Talmudic Scriptures" (pp. 1-34) and a second part dealing with "Theodicy in the Jewish philosophy of the Middle Ages" (pp. 35-111). The mediæval philosophers whose doctrines are expounded are (1) Saadja, (2) Joseph ibn Zaddik, (3) Jehuda Halevi, (4) Abraham ibn Daud, (5) Moses Maimonides. Neither Jewish philosophy nor religion, the author seeks to establish against Schopenhauer, is uniformly optimistic. In reality the characteristic attitude of Judaism, manifest at a very early stage and finally affirming itself after all the influences from ancient philosophy, Christian gnosticism, &c., undergone by Jewish thinkers, is optimism in "view of the world" together with pessimism in "view of life". Pessimism as regards life in the present is overcome by a "transcendent optimism" having reference either to life on earth in the future (as with the prophets) or to a future life of the individual (as with philosophers influenced by Greek thought). The problem of an "immanent theodicy," or justification of the evils of life as part of a providential government of the world, is constantly attempted by the Jewish

philosophers, but receives no satisfactory solution. The only tenable position for the religious as for the philosophical consciousness is in the end renunciation of every theodicy that is not "transcendent". This renunciation is common to the Jewish religious consciousness and to the Kantian philosophy.

*Glauben oder Wissen? Eine Untersuchung über die menschliche Geistesseinheit auf biologischer Grundlage.* Von Prof. Dr. KARL FISCHER, Gymnasialdirektor. Gotha: F. A. Perthes, 1890. Pp. 60.

Setting out from a consideration of man's biological predispositions as compared with those of animals, the author concludes that only by the act of will involved in belief could man have become what he is. Purely "objective" knowledge, knowledge without emotion, is diametrically opposed to human nature. The "autonomy of science" is a fiction. Science, in reality, rests on an "unscientific" foundation of feeling and belief. The division imagined between religious belief and scientific knowledge, therefore, does not exist. Science and religion, when philosophically examined, are seen to have similar grounds. Neither of them is "presuppositionless". Belief in general arises from a feeling of "dependence," from which human nature in vain strives to emancipate itself. This being recognised, there is nothing to hinder us from conceiving the sciences, whether of nature or man, together with a religion based in revelation, as forming a single system without any break or opposition of its parts.

*Independence.* Stanzas by G. TH. MEJDELL. Christiania: A. Cammermeyer, 1890. Pp. 46.

This daintily printed collection of sentences or thoughts (rather than "stanzas") is concerned with an old theme, but has an originality of its own. The theme is the old one of each man's duty to rise above external circumstances and live his own life—to become and be himself. It is turned over by the Norwegian author in a threefold series of reflexions; to find the most suitable expression for which he began four years ago, at the mature age of 35, to teach himself English. Thus he describes his "opuscule" as "an experiment to corroboration of a theory: its gospel is autodidacticism and itself an offshoot of autodidacticism". With a purely literary knowledge of English, his expression is, in general, very quaint; but it is a quaintness that has curious charm and force, and there is always masculine thought behind. Take one or two sentences for illustration at random:—"It has become the vogue to sing the praise of childhood as the happy age. The children of the nineteenth century will sparely join in this hallelujah, knowing at once too much and too little to do cherubs". . . . "Lawbound is the universe from infinity of beginning to infinity of end—infinity not the oppositeness of the finite but the finite's consummation, and chance the infinite compound of finite causes". . . . "The drip, drip, dreariness of steady application is nothing to the bore. But to bear boredom and no bore be—is the blend of parts that conquers the world." (Italics not the author's.) Readers of sentences or clauses like these will "sparely" refrain from wishing to know more of such an "autodidact".

THE following NEW EDITIONS have been received:—

*The Methods of Ethics.* By HENRY SIDGWICK, Knightbridge Professor, &c. Fourth Edition. London: Macmillan & Co., 1890. Pp. xxix., 522.

[A fourth edition in sixteen years from its original publication testifies both to the standard character of this work and to the abiding English interest in at least ethical speculation. Alterations are now made in the way of inserted addition, to meet criticisms by Dr. Martineau, Prof. Fowler, Mr. Rashdall and Prof. v. Giżycki, and in the way of substitution, to deal with Dr. Martineau's ethical theory in its later-published final form. The positions taken up by Prof. Sidgwick on the topics involved in these alterations have, at one time or another, had prior statement in the pages of *MIND*. By compression or omission of other matter, with occasional shifting of digressions from text to foot-notes, room has been found for the alterations without adding a single page to the length of the third edition. The apparent extension, pp. 506-22, is taken up with a very serviceable Index made by Miss Jones of Girton College. With this, added to the analysis of the whole main argument, given from the first in such excellent form under the head of "Contents," readers have all the help they could desire to effective use of the now celebrated book.]

*Character as seen in Body and Parentage.* By FURNEAUX JORDAN, F.R.C.S. New Edition. London: Kegan Paul, Trench, Trübner, & Co., 1890. Pp. viii., 111. [A reduced, re-arranged, for the most part re-written, and generally simplified new edition of the author's *Anatomy and Physiology in Character*, noticed in *MIND* xii. 298. For his old division of "shrewish" and "non-shrewish," he now generally substitutes "active unimpassioned" and "reflective impassioned". Otherwise, the old positions are maintained—all the more effectively because of the condensed presentation.]

RECEIVED also:—

- A. Marshall, *Principles of Economics*, vol. i., Lond., Macmillan, pp. xxviii., 754.
- C. Bennett, *The Modern Malady*, Lond., E. Arnold, pp. xvii., 184.
- P. Carus, *The Ethical Problem*, Chicago, Open Court Pub. Co., pp. vii., 90.
- P. Regnaud, *Principes généraux de Linguistique Indo-Européenne*, Paris, Hachette, pp. 118.
- E. Grosse, *H. Spencer's Lehre von dem Unerkennbaren*, Leip., Veit, pp. vi., 119.
- V. Cathrein, *Moralphilosophie*, Bd. i., Freib. i. B., Herder, pp. xv., 522.
- W. Wetz, *Shakespeare vom Standpunkt der vergleichenden Literaturgeschichte*, Bd. i., Worms, Reiss, pp. xx., 579.
- L. Fischer, "*Cogito ergo sum*," Leip., Bergmann, pp. 58.
- A. Bilharz, *Metaphysik als Lehre vom Vorbewussten*, Wiesbaden, Bergmann, pp. vii., 158.
- A. Hjelmsårus, *Formella Logiken baserad på Identitetsprincipien*, Lund, P. Lindstadt, pp. 138.

NOTICE will follow.

## IX.—FOREIGN PERIODICALS.

THE AMERICAN JOURNAL OF PSYCHOLOGY.—Vol. iii. No. 2. C. F. Hodge.—A Sketch of the History of Reflex Action, i. [Based upon notes from the original sources made about 1880 by Dr. Stanley Hall, who meant to treat the subject himself till he was forestalled in 1881 by C. Eckhard. The introductory chapter given in last No. was from Dr. Hall's own hand, and Dr. Hodge aims now at utilising the notes in the spirit there indicated—namely, so as to give prominence to the psychological implications of the steps in the development of the doctrine, whereas Eckhard's interest was mainly physiological. The present section works down to C. Bell, through Descartes, Willis, Astruc, Whytt (with cross-reference to Haller), Unzer, Prochaska, Legallois, as chief handers-on of the torch.] E. A. Kirkpatrick—Observations on College Seniors and Electives in Psychological Subjects. [A six-page summary of answers furnished by over 200 American students in the larger colleges or universities to four general questions (propounded at the instance of Dr. G. S. Hall) about the motives, range, &c., of their psychological study.] E. C. Sanford—A simple and inexpensive Chronoscope. [Constructed upon a suggestion made forty years ago by Kaiser, the astronomer of Leyden, as to the applicability of the principle of the Vernier to the exact measurement of time. The "time-vernier" here described suffices "for the demonstration of nearly all the more important facts of simple reaction-times, and abundantly so for the longer and more complicated reactions with discrimination and choice, and for association-times, where the average variation of the single tests in a series may itself amount to a tenth of a second or more."] Psychological Literature. [Nervous System, Experimental, Psychiatry, Criminology, Heredity and Sex, Miscellaneous.] Psychology in American Colleges and Universities. [Accounts of their work, past or projected, by different Professors.] Notes.

REVUE PHILOSOPHIQUE.—An. xv., No. 7. G. Fonsegrive—L'homogénéité morale. [On what conditions can the psychological "heterogeneity" of human nature give place to the "homogeneity" aimed at by moralists? To decide this question, the elements of personality must be reduced to a small number of systems. It will then be seen which system can serve as centre to the rest. Analysis reveals (1) the "personnage sensitif," (2) the "personnage sentimental," (3) the "personnage verbal . . . consistant on inconsistent"; together with a greater or less number of "personnages subsidiaires, caractères d'emprunt". The "verbal personage" is the reflexion of current morality, and accordingly not, even by itself and apart from conflicts with the others, perfectly consistent or homogeneous. Only by the development of the "verbal" into the "rational" personage can the consistency necessary for morality be attained; and then not without conflict with the two other personages. At the same time, the verbal personage can only retain dominance by incarnating itself in the personages of sense and sentiment, "which alone have a direct action on our muscles, and, through them, on our actions". The natural ally of reason against sense is sentiment; but some kind of ascetic discipline is necessary as a means to the attainment of complete moral consistency.] G. Sorel—Contributions psycho-physiques à l'étude esthétique

(fin). [Continues the argument against the reduction of beauty to unconsciously perceived mathematical relations; architecture being now dealt with.] H. Joly—*La folie de J.-J. Rousseau*. [Defends from accusations of "madness" the active and creative period of the life of Rousseau. The scientific mark of insanity is a "disaggregation" of the personality, showing itself in a break with past character or with all social surroundings. But those disorders of Rousseau's character by which his genius was troubled can be traced through his whole past, and they did not exclude intellectual consistency. Nor was he a completely isolated personage; for, while he was in violent opposition to one portion of contemporary society, he was the first to bring adequately to consciousness the aspirations of another portion. In the latter part of his life indeed, tendencies to madness appeared; but where the signs of it are usually sought—as in the "mania of persecutions"—the symptoms that have been held to indicate it are utterly different from those described by alienists under the same name.] A. Binet—*La perception des longueurs et des nombres chez quelques petits enfants*. [Experiments on the powers of two children (aged, respectively, four years and three months and two years and a half) to estimate lengths and numbers. The eldest of the two can estimate small differences of length almost as accurately as an adult. Verbal numeration having been taught only up to three, the child cannot distinguish numbers accurately beyond six; (she can distinguish with certainty between five and six counters, but not beyond); anything beyond is estimated as if it were a continuous magnitude.] Analyses, &c. (J. Veitch, *Knowing and Being*, &c.). *Rev. des Périod. Société de Psychologie Physiologique* (Ch. Henry—*Sur une loi générale des réactions psycho-motrices*). No. 8. A. Espinas—*Les origines de la technologie* (i). [An account of the "physico-theological" stage of human belief as regards "technology," or the arts subservient to life. The physico-theological doctrine is found to have been the dominant one in Greece just before the historical period, and is illustrated particularly from Homer and Hesiod. At this stage of belief the practice of the arts was according to customs thought of as divinely sanctioned; and neither gods nor men were placed in explicit opposition to nature. Previously there had no doubt been an unconscious social growth of arts, and this growth continued to go on under the sanctions of religion. Later, the explicitly theological idea of "supernatural" intervention, and the idea of art, or human intervention, become opposed in different ways to "nature".] A. Binet—*L'inhibition dans les phénomènes de conscience*. [Several classes of psychological phenomena—such as the rectification of an illusion and the suppression of sensorial representations by hypnotic suggestions—are brought under the conception of "negation"; this having been first determined to be the opposition of two representations, equally positive, one of which "contradicts" the other. The point to be noted is that the antagonism is of psychological nature, and is produced because the representations cannot form part of the same synthesis. In "competition of the two visual fields," for example, suppression of one image by another is due to their being "contradictory" in this sense. This phenomenon of "antagonism and exclusion" is not precisely equivalent to physiological inhibition; but it may conveniently be called "inhibition" in psychology. Perception of the third dimension in monocular vision is briefly discussed. M. Binet has discovered independently that the perspective of a picture or photograph comes out more strongly in monocular vision (p. 151). He is mistaken, however,

in thinking that he has been the first to notice this. Cp. Stricker, *Studien über die Association der Vorstellungen* (1883), where it is referred to as a fact known to experts, and an explanation is sought.] G. Lechalas—*La géométrie générale et les jugements synthétiques a priori*. [A rejoinder to M. Renouvier's criticism of the author's attempt to interpret "general" or non-Euclidian geometry in the service of rationalism; see *Critique Philosophique*, 1889, Nos. 9 and 11.] Analyses, &c. (F. H. Collins, *An Epitome of the Synthetic Philosophy*, &c.). Rev. des Périod. Correspondance (F. Picavet—*Les manuscrits de M. de Biran*). No. 9. A. Lalande—*Remarques sur le principe de causalité*. [The idea of cause is only an approximation, a sort of symbol useful in practice, but without any scientific or philosophical rigour. All science is at bottom a problem of mathematics. Physical laws are really mathematical laws; but often the relations involved are too complex for us to calculate. When this is so, we assume that there is a mathematical relation if we could only discover it, and in the meantime proceed to determine the relation approximately by experiment, as we might do, for example, in the case of the ratio of the circumference of the circle to its diameter, if we could not deduce it. "The true foundation of induction is therefore the universal validity of mathematics, which itself rests in ultimate analysis on the principle of identity; and it is because a perfect understanding could deduce, that a finite understanding can legitimately make use of induction." Science passes successively through the stages (1) of mere classification, (2) of approximate "causal" laws, and (3) of rigorous mathematical deduction. Mill's theory of induction supposes the second stage, which is only transitional, to be definitive. The bond is evident between the empirical doctrine and the way of thinking that is peculiar to that stage. "A more advanced state of science, manifesting the mathematical principles on which it is founded, must on the contrary bring back the mind to rationalism." J.-M. Guardia—*Philosophes espagnols*: J. Huarte. A. Espinas—*Les origines de la technologie* (fin). [Describes the actual state of the arts corresponding to the "physico-theological" doctrine.] V. Egger—*Un document inédit sur les manuscrits de Descartes*. *Notices bibliographiques*. Rev. des Périod.

RIVISTA ITALIANA DI FILOSOFIA.—An. v. 2, No. 1. L. Credaro—*Il passato della storia della filosofia*. [Reviews the development of History of Philosophy from the earliest times to the present. The conclusion is that, within the modern period, after having been first a blindly credulous collection of biographies of philosophers or a superficial and subjective narration, then a critical exposition not independent of a religious principle, afterwards a critical exposition in the service of some philosophical school, it has at length constituted itself as an independent and purely historical science.] G. Zuccante—*Fatti e idee*. [A protest against exclusive devotion to "facts" as distinguished from speculative "ideas" in science, and against "false realism" in art. Without speculation there would be no science. "True realism" takes account of the ideal element in reality, while "false realism" truncates reality by proscribing its ideal element. Science is not hostile to art, but has furnished it with new material which it has not yet quite learnt how to use.] G. Rossi—*I principii Newtoniani della filosofia naturale*. [Though Newton confined himself to geometrical demonstrations, his investigations were guided by a general philosophical view of nature, and, without this general view, he would not have discovered the true system of the world.] S. Ferrari—*La scuola e la filosofia pitagoriche* (iv.).



[Comparison of the Pythagorean with other ancient schools, and discussion of the innovations of Philolaus.] L. M. Billia—Il nuovo regolamento delle scuole normali. Bibliografia, &c.

ZEITSCHRIFT FÜR PHILOSOPHIE, &c.—Bd. xcvii, Heft. 1. G. Glogau—Ueber Goethe. Studie zur Entwicklung des deutschen Geistes. J. Volkelt—Das Denken als Hilfsvorstellungs-Thätigkeit und als Anpassungsvorgang (ii.). [The influence of Darwinism on Theory of Knowledge has shown itself in the attempts made by Avenarius, Shute, Mach, and others, to explain scientific thought as the expression of a "principle of adaptation". The principle has really some "anthropological" application; man adapts himself to his surroundings by means of scientific knowledge. This application "positivists" mix up with the strictly epistemological application of the principle—which alone is here in question. Even in its epistemological application its sense varies. Sometimes it is proposed in the form of a principle of "economy," or least expenditure of energy, sometimes as a principle of "greatest useful result". In its first and most plausible form, though it explains some scientific processes, it fails to explain science as a whole. Nor do we get a more favourable result when we employ the psychological test. Scientific thought does not actually proceed by trying which way of thinking is easiest. All the objections apply more strongly when for "ease" is substituted "pleasurable expenditure". The principle in its other form, which views knowledge as the mode of conception that leads to the most useful practical results, fails to indicate any method of attaining such results. To arrive at a method we have to call in some process of "mediation," and this is to fall back on a theoretical criterion. Rejection of the principle on epistemological grounds is here again confirmed psychologically. "Whatever scientific investigation I may be following, I never find that the decisive statement of the question runs thus: How must the facts in hand be causally supplemented and ordered so that a result as large as possible may be yielded for the government of nature and for action?" So far, the logical necessity that thought is found in the end to imply has not been resolved into any more primitive elements.] H. Bender—Ueber das Wesen der Sittlichkeit und den natürlichen Entwicklungsprozess des sittlichen Gedankens (i.). [Three "grounds of determination" of action are distinguished: (1) "general good," the end of the non-egoistic strivings, (2) "own good," the end of the egoistic strivings, (3) "own happiness," the end of desire for the individual; this end being composed of egoistic and non-egoistic satisfactions. The conception of the general good must be recognised as the highest objective ground of determination. Only on the basis of this principle can a system of ethics satisfying all legitimate claims be built up. Actions are objectively moral when they are serviceable to the common good; subjectively moral, when they proceed from an unselfish inclination to serve the common good; moral in the highest sense, or truly good, when they are both actually in accordance with the moral law and proceed from a truly good disposition, that is, a disposition unselfishly regardful of the interests of others.] Recensionen. Heft 2. K. Joël—Zur Geschichte der Zahl-prinzipien in der Griechischen Philosophie. [The philosophic tendencies that find expression in the elder Ionians and the Pythagoreans are the impulse to seek unity, and the parallelising and antithetic impulse; (other impulses being the discriminating, and the mediating and concatenating impulse). Their speculations are here examined at length from the point of view indicated in this general formula.] H. Bender—Ueber das Wesen der

Sittlichkeit, &c. (ii.). [Kant's separation of duty from inclination is examined, and is found to rest on the classing together of all "inclinations" as egoistic. There are, however, non-egoistic inclinations. The Kantian separation having been got rid of, the "subjectively moral content of our feelings" is found to be proportional to the degree they involve of unselfish and impartial care for the weal and woe of others. Mingled as this is with impulses of personal sympathy and friendship, which probably always contain both non-egoistic and egoistic elements, the degree to which it is present can hardly ever be determined with accuracy.] Dr. Hayd—Die Wissenschaft des Wissens von Wilh. Rosenkrantz (i.). Recensionen. Notizen, &c.

PHILOSOPHISCHE STUDIEN.—Bd. vi. Heft 2. G. Martius—Ueber die muskuläre Reaction u. die Aufmerksamkeit. [A considerable research, in two parts, bearing upon L. Lange's distinction of "sensory" (or "complete") and "muscular" (or "shortened") reaction, adopted by Wundt for his general theory of apperception, and also by Münsterberg in his assault upon this theory (see MIND No. 58, p. 234). In the first part, Martius fails to get confirmation of Münsterberg's experimental results with complex intellection, but finds, on the contrary, that with this the "muscular" reaction is lengthened (rather than shortened),—a fact which justifies Wundt's limitation of the use of this kind of reaction to the case of simple sense-impressions; finds also that, with complex intellection, a third form of attention is to be distinguished between the "sensory" and the "muscular"—one, namely, that is turned upon the associative connexion between the terms of the reaction, and which may be called "central". The second part contests, upon experimental grounds, Wundt's position that the "shortened" (or "muscular") reaction is to be regarded as a reflex or physiological one, rather than as having a properly psychical character.] G. Dwelshauvers—Untersuchungen zur Mechanik der activen Aufmerksamkeit. [The unfinished research referred to in notice of the author's *Psychologie de l'Apperception*, p. 575, above.] W. Wundt—Ueber die Methoden der Messung des Bewusstseinsumfanges. [After some general consideration of the problem of the range or scope of consciousness, proposes that it should be determined by way of successive impressions (preferentially sounds) rather than of simultaneous impressions (mainly visual), as hitherto; and takes occasion to uphold against F. Schuman (in pt. i. of the new *Zeitsch. f. Psychol. u. Phys. d. Sinnesorgane*) the presupposition made in all previous investigation of the subject, viz., that we can have immediate intuition of the (qualitative or quantitative) likeness or difference of complex sense-presentations only when each of the two things compared is present to consciousness as a simultaneous whole.] W. Brix—Der mathematische Zahlbegriff u. seine Entwicklungsformen (iii.). [The concluding two chapters—"General Concept of Number" and "Logical Development of the Concept of Number"—of the very elaborate essay continued through last three parts of the *Phil. Stud.*]

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE.—Bd. iii., Heft 4. P. Natop—Demokrit-Spuren bei Platon. [Important and characteristic positions of Platonism, such as the geometrical representation of the world, the high estimate of mathematics generally, the "subjectivation of qualities," are related to the Democritean positions. Plato arrived at them under the same "Eleatic-Pythagorean incitations" that had impelled Democritus. He arrived at them by a way of his own, but—as the author seeks to show at length—not without taking account of

the thoughts of Democritus and working them up into his own system. This relationship is the reason why Democritus is so little referred to by Plato; for Plato as a rule names only when he contests. He repeats Democritus without having proceeded from him, and so has no direct inducement to take account of him. For the rest, in ethical discussions, where he is conscious of dependence, he refers to Democritus as distinctly as to others who are not named, but whose doctrines must have been easily recognised by contemporary readers.] C. Hebler—Zu Platon's *Timæus*, S. 84 Bf. R. Eucken—Aristoteles' Urtheil über die Menschen. [Aristotle's view of human life was partly determined by reference to a Platonic ideal of life in detachment from the life of the average man and in opposition to it, but received its distinctive character from the effort to bring this ideal into relation with the motives of ordinary human nature. In his conception of human nature as it is, he simply put together the ideas offered to him by his social surroundings; that is, his point of view was distinctively Hellenic. "Self-love," in its lower or in its nobler form, is regarded by him as the chief impulsive force of human action. The way in which the ideal is brought into relation with ordinary motives is by a series of gradations. From average men are distinguished the incorrigibly bad as well as the truly good; and among the impulses not strictly good are distinguished those that are more and those that are less adapted to produce virtuous actions. The ordinary man can thus be regarded as capable of being trained in habits of virtue. In politics a still more favourable view is taken of the possibilities of human nature; and this finds its justification in Aristotle's doctrine of the "summation" of reason in the community.] C. E. Ruelle—Damascius.—Son traité des premiers principes (ii.). L. Stein—Ein ungedruckter Brief von Descartes. [A letter of Descartes to "M. Dozem, gentilhomme Allemand," on the solution of an equation, taken from the excerpts made by Leibniz at Paris in 1675.] R. Stölzle—Die Erlanger Giordano Bruno-Manuscripte. [A detailed account of manuscript-copies of writings of Bruno discovered at Erlangen. They consist of commentaries on part of the *Physics*, &c., of Aristotle, and of writings *De Magia physica*.] G. Geil—Gottesidee bei Locke und dessen Gottesbeweis. [Locke arrives at the idea of God in two ways—by the psychological method of ascending from human attributes to divine attributes, and by Descartes' ontological method. While preferring the cosmological proof of the existence of God, he employs also the metaphysical method of proof from the intuitively known Ego, and here again he is under the Cartesian influence. It is a mistake to say, as some have done, that he professedly rejects the Cartesian proofs. He would not have them held for the only valid proofs, and he contends that Descartes' ontological argument does not by itself prove a *thinking* Deity; but he does not reject them. The use he makes of them is really, however, inconsistent with empirical philosophy.] Jahresbericht (I. Bruns, H. Siebeck, B. Erdmann, I. Bywater, P. Tannery, E. Radlow). Neueste Erscheinungen, &c.

PHILOSOPHISCHES JAHRBUCH.—Bd. iii., Heft 3. E. Kadeřávek—Ueber die Einführung der christlichen oder aristotelisch-thomistischen Philosophie an den philosophischen Facultäten (i.). C. Gutberlet—Der Kampf um die Willensfreiheit (iii.). [Continues the defence of indeterminism as upheld by Catholic orthodoxy; the doctrines opposed in the present article being mainly those of Wundt, Münsterberg, and Schopenhauer.] C. Braig—Eine mongolische Kosmologie (Schluss). [Treats of the Buddhists of Nepal; the account being founded on B. H. Hodgson's *Essays on the*

*Languages, Literature and Religion of Nepal and Tibet* (1874). Some approaches to a true theism, overwhelmed by anticipations of the monistic errors of Schelling and Hegel, Schopenhauer and Hartmann, are what the author finds in the cosmological speculations described.] M. Sierp—Pascals Stellung zum Skepticismus (iv.). Recensionen und Referate. Philosophischer Sprechsaal (Isenkrahe—Zur Kritik der thomistischen Erkenntnisstheorie). Zeitschriftenschau. Miscellen und Nachrichten.

ZEITSCHRIFT FÜR PSYCHOLOGIE U. PHYSIOLOGIE DER SINNESORGANE.—Bd. i. Heft 3. W. Uhthoff—Ueber die kleinsten wahrnehmbaren Gesichtswinkel in den verschiedenen Teilen des Spektrums. A. Döring—Die Ästhetischen Gefühle. Besprechungen. Litteraturbericht. [These last headings of the now regularly constituted new Review occupy about two-thirds of the part, and are characterised by a promising thoroughness, as well as comprehensiveness, of treatment. Of the two main articles, the first is of that very highly specialised kind which, to judge by the previous two parts, will apparently be a distinctive feature of the Review; the second, on the other hand, is an essay in general psychology which might very well have found its way into print in any of the older philosophical periodicals.] Heft 4. K. L. Schaefer—Ueber die Wahrnehmung u. Lokalisation von Schwebungen u. Differenztönen. H. Münsterberg—Die Association successiver Vorstellungen. [An account of the experiments that have confirmed the author in the position he had been led to take up (see MIND No. 58, p. 244), on general theoretic grounds, that to find a satisfactory psychophysical expression for (Contiguous) Association, it must be supposed always to take place between simultaneous elements, or in what is commonly called the co-existent form. His experiments are characteristically ingenious, but cannot be given even in barest outline here. The whole subject, of special interest and importance as it is, is reserved for detailed treatment on some future occasion.] G. Th. Fechner—Ueber negative Empfindungswerte. [Conclusion of a correspondence that had been carried on with Prof. W. Preyer, up to 1874.] Litteraturbericht.

NOTICES of some other periodicals are, accidentally, deferred.

## X.—NOTES.

### ON THE UTILITARIAN FORMULA.

The Utilitarian Formula—"the greatest happiness of the greatest number"—is notoriously ambiguous and indefinite. Whether increase of number in itself is an end is not generally discussed. Mr. Spencer at one place in his *Social Statics*, long since withdrawn, tacitly assumes it. Prof. Sidgwick discusses who of those beings brought into existence are to count in the greatest number benefiting under the formula, but he does not consider the question of increase of the number in pure abstraction. Mr. Spencer further declares that the formula implies rights to equal happinesses. Mill maintains that the formula is completed by a rider of equal claims and an arithmetical principle; there is no discussion of the relative claims of the rider and the formula should these happen to conflict. Ruskin in his *Munera Pulveris* undertakes to prove a coincidence of greatest happiness and happiness of the greatest number; this is a specimen of the kind of elucidation that the utilitarian principle requires at the present stage. The subject is important and practical and has probably been more fully treated elsewhere.

We here have to do with the metaphysical element in the problem of philosophical socialism, which must precede all the difficulties with regard to physical effects. I use the words 'physical' and 'metaphysical' in a special sense, which I think will be serviceable. Whether mere increase of number promotes happiness like warmth, and within what limits; whether greatest equal happiness will be coincident with and secured by the same means as absolute greatest happiness, and by what means they are to be brought about, are as I should say, physical questions. But beyond these the metaphysician must ask what is the ultimate end required—greatest total happiness, or greatest amount of equal happinesses, or what compromise between these two. If these are physically coincident, then the metaphysical element of the problem so far vanishes. Yet it must be entertained for the present as a potential element. Similarly with regard to the element of number. This requires explication.

In the formula, is "greatest number" to be taken to mean the greatest number of those who will come into existence, or is there an independent desire that the number of individuals should be as great as possible? Supposing that by our mere fiat we could bring into existence a number of beings destined to the present or the probable fate of human beings, would we do so? The question could probably be more accurately stated, but the foregoing is sufficient to indicate its nature. Supposing again that, while by bringing a number of beings into existence we increased the total quantity of happiness, we at the same time diminished the amount available for each, would we bring these additional beings into existence?

In like manner, if by equalising amounts of happiness we decreased the total amount, would we will this to be done? If, as was hinted, we split the question of philosophical socialism up into its parts, we find in the first place this substantial question of pure metaphysic, of which the following is an attempt at an approximate statement in simplest abstract form. Supposing that there were two men of different capacities of enjoyment, and a substance of uniform quality to be distributed among

them, so that say the quantity of enjoyment which one unit of it would give to one of them, A, would be double that which it would give to the other, B. Suppose, further, that these two men constituted the universe of living beings now and to come, and suppose that the amount of enjoyment afforded did not diminish or increase with the amount of the given stuff already enjoyed by either of the men, so that by giving all to A the total enjoyment of happiness produced would be double that produced by giving it all to B. How would we distribute the substance? This question, which could again doubtless be stated with more or better conditions is the fundamental philosophical question necessitated by the very terms of our formula, since it is not evident that the whole amount of happiness is increased by its distribution over a large number. Would we give more to A in order that the total quantity of happiness might be greatest, or more to B in order that their lives might be more nearly equal in happiness; or equal amounts to each? In ordinary social life, of course, the importance of this question is traversed by the fact that means of satisfaction continue and multiply existences, and also by the fact that the means of satisfaction are not uniform, this man being pleased with this and that man with that; but yet the question in its abstract form is very important as various degrees of approximation to the circumstances described are met with, often indeed pretty close in similarity.

The question of a third end, independent of both greatest happiness and absolute justice and including all rights, is only mentioned here to be reserved. For the ultimate end as implied in the formula, no happiness should be transferred from one to another *unless it is to be increased in amount thereby or to improve the distribution*. It is just possible for one to maintain that there is a law forbidding transference even to secure either of these ends. Mr. Spencer maintains this law as a means, and many of his earlier arguments would I think go far to establish it as an end, although it seems somewhat strange, almost like a superstition. I must approach the question in this way:—Endeavour by an effort of abstraction to consider myself and another alone in the world and imagine the two of us bent on different courses of action, myself convinced beyond doubt that for him to go his way would mean destruction to both, but that by willing to prevent him I could save both, then try to judge whether I could still allow him to go. If any judgment were possible, I would approach to an ascertainment of its being possible to desire the maintenance of rights whether or not these were connected with happiness. I must add that the universe is supposed to end with us two, this abstraction seeming to be necessary. No judgment comes. Possibly the abstraction does not correspond to any physical possibility.

By simple inspection we recognise many acts as those which should be done, and by induction we class these acts under three heads—the maintenance of rights, the production of happiness, and the equalisation of happinesses. There is a strong and almost overwhelming tendency to bring the induction of rights under the induction of happiness. This calls for a strong effort to dissociate them, often repeated in the history of philosophy. The securest foundation for their connexion would be the failure to realise the opposite. Whether it is conceivable that a maintenance of right should lead to unhappiness or wrong distribution is a difficult question, requiring clear apprehension of the terms right, happiness, distribution. I fail to see clearly how Mr. Spencer can base the proposition that rights must be maintained on the propositions that they must lead to happiness, and that it is impossible to determine

what happiness is. Is this possible, and how? To elucidate my difficulty, take the following indefiniteness, which I think has not been cleared by Mr. Spencer in his deduction of greatest happiness from maintenance of rights—to say nothing of the vagueness of the end there specified: (1) in the ignorance of what happiness is, (2) in the indefiniteness of the number and kind of beings interested, and (3) in the indefiniteness of the element of ultimate distribution; for greatest amount of happiness cannot be assumed as Mr. Spencer assumes it, as the sole end. A violation of right connotes a desire prevented from being satisfied, or a pain inflicted. This is in itself a loss, but it might be made good by being the cause of the satisfaction of desires to come, either otherwise certain to arise, or themselves the result of the violation of right, or the acquisition of happiness, or avoidance of pains. Those who maintain that this result is impossible may mean to say either that the mere excision of the violation of the right with all its consequences would of itself leave the sum of happiness and its good distribution greater in value than it would be if the violation were committed; or they may mean to say that a mode of positive action is conceivable and possible which would secure equivalent results to those which are the compensatory consequences of the violation of rights or better consequences still.

To return to the chief point. It is clear that there is something more in the utilitarian ultimate conception than merely the greatest happiness *plus* an arithmetical truth. For it would not be a matter of indifference that all happiness should be transferred to one person provided it were not thereby diminished in arithmetic sum. Whether this is possible or not is a physical question. Metaphysically, we must entertain the absurd supposition and give judgment upon it if possible; whence it becomes evident that there is a second independent element in the utilitarian ultimate conception. This is the element which Mr. Spencer has brought out in the metaphysical part of his attack on the utilitarian formula, and I would propose to call it absolute justice. Whether it may be held correct to say that all (human) beings have an equal *right* to happiness, the product, or not, is another question. I mean as a question of words. At any rate if this absolute-justice element in the great conception be admitted, all subsidiary rights as means to greatest general happiness should at utmost be classed under relative justice. Of course, if there are rights not relative to the two admitted ends, the claim of good distribution ultimately to the title of absolute justice may be disputed in favour of these rights which are not relative.

It may be permissible to suppose that, by pursuing relative justice or some other means, we should secure at once the greatest possible amount of best-distributed happiness to the greatest possible number of (human) beings. In this case the metaphysical questions would have no bearing—no counterpart in physical possibility: which might account for the paralysis of the understanding in examining them.

JAMES SUTHERLAND.

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THE ARISTOTELIAN SOCIETY FOR THE SYSTEMATIC STUDY OF PHILOSOPHY (22, Albemarle Street, W.).—The only meeting since last record has been the Annual Business Meeting on June 16, at which all the members of the Committee were re-elected for the ensuing (the twelfth) Session. This will commence on Monday, Nov. 8, when the President will deliver an Address on "The Laws of Association," at 8 o'clock p.m.



